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CONSTRUCTION • OPERATIONS • MAINTENANCE

PIPE LINE INDUSTRY

JANUARY
1958

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JAN 22 1958

CONSTRUCTION PROGRESS REPORT

1958 WORLD FORECAST
Record 26,000 Miles to Be Constructed 36

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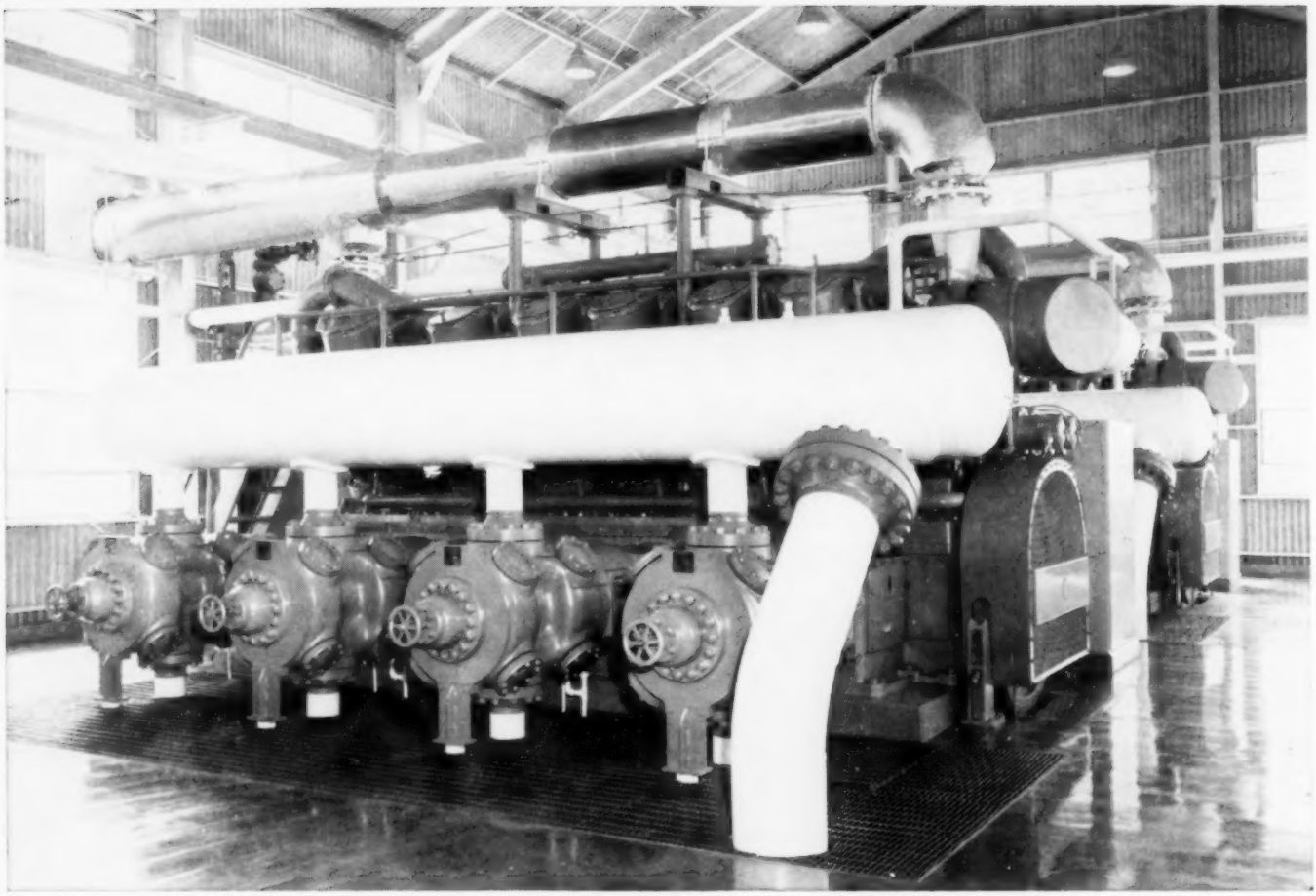

At Shelbyville, Indiana

American Louisiana installs 10,000 hp of KVS turbocharged gas-engine compressors

At Shelbyville, Indiana, in one of the three primary stations of American Louisiana Pipe Line Company, the efficiency of Ingersoll-Rand compressors and the flexibility of 4-cycle power are being applied to the task of supplying gas to utilities in Michigan, Wisconsin, Iowa and Missouri.

All of the five gas compressors at the Shelbyville station are 2000-hp Ingersoll-Rand KVS turbocharged gas-engine units. These are basically the same machines which have been setting new records since the first KVS was installed early in 1952, but incorporating the improvements which have resulted from years of tough service.

Incidentally, the first KVS (and the world's first turbocharged engine-compressor) was installed for an American Louisiana affiliate. With the forthcoming installation of six units at its new Defiance (Ohio) station, American Louisiana and affiliates will be operating 23 KVS compressors totalling 44,000 hp.

In addition to heavy-duty compressors, Ingersoll-Rand equipment for pipeline services includes rugged 4-cycle V-angle engine-generating units, centrifugal pumps, starting-air compressors, air and electric Impactools, and many other products. Ask your I-R representative how I-R can help you on your job.

Only I-R Compressors have CHANNEL VALVES

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PIPE LINE INDUSTRY

CONTENTS and Quick Look

January, 1958 Vol. 8, No. 1

To help you put first things first, scan these time-saving digests, checking ☑ those you want to read first.

Construction to Hit Record 26,072 Miles in 1958

☐ PIPE LINE INDUSTRY's survey of 228 pipe line companies indicates a 19 percent increase in U. S. pipe line construction can be expected in 1958. Pipelaying in Free World countries outside the U. S. is due to exceed 1957 activity by 50 percent. This forecast for '58 includes pipe sizes, station additions, and prime movers to be installed.

By Melvin A. Judah.....Page 36

Pipe Line Contractors Return to Florida

☐ Pipe line construction leaders will meet January 19-22 in Boca Raton, Fla., to review past developments and look at future prospects. A full program will cover tax problems and the effect of the money market on pipe line expansion. Special recognition will be given lifetime honorary members and past presidents of the association .....Page 38

Pipe Line Progress Report

☐ Biggest pipelaying news of 1957 centered around marked advancements in welding, submarine pipelaying and automatic control. New equipment and methods in these and other operations enabled the industry to meet the challenge of laying more miles of larger pipe and at the same time achieve more efficient operation.

By Melvin A. Judah and John C. Watts....Page 40

On-the-Job Application of Thin Film Coating

☐ First major installation of a thin film coating is being watched closely by pipe line engineers. Portable coating yard is designed to handle application of exterior coat by spray gun. Atmospheric conditions have little effect as result of coating techniques developed.

By John C. Watts.....Page 49

Installing Drips Without Shutdown

☐ Pacific Northwest adapts usual "hot tapping" procedures to install drips during revision of main line. After tap is made in top of line, this opening is used to tap the bottom from the inside. Using this method, drips are installed without interruption of line operation.

By L. Harleston.....Page 53

Double Jointing Speeds Construction of Arabian Line

☐ Efficiency and flexibility is featured in Aramco's new double-ending yard in Saudi Arabia. Assembly line techniques require minimum of supervision. Only heavy equipment is the crane used for loading and unloading pipe. .....Page 56

Are Cross-Country Water Lines in the Contractor's Future?

☐ Forecasts predict home and industry water demands will be nearly doubled by 1975; agricultural use will continue to climb, too. Pipe lines are getting more and more attention as the answer to the transport problem. Oil and gas pipe line contractors already have the experience and equipment to handle the job of laying the lines needed.

By Francis J. Wilson.....Page 60

BS&W Monitor Guards Pipe Line Specs

☐ Latest capacitance probe instrument uses principle proved successful for batch interface detection to continuously monitor crude oil at LACT installations. Oil failing to meet pipe line specifications is automatically prevented from entering the line. Here is a complete description of its installation and operation.

By Howard J. EnDean.....Page 62

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PIPE LINE INDUSTRY published every month. Entered as second class mail matter July 9, 1954, at the post office at Houston, Texas, under the act of March 3, 1879.

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Politics and the truth

TIME WAS when the public told politicians what they wanted—and got it.

Now it appears that the tail has started wagging the dog. A new political philosophy has entered our way of life: *Eliminate all logic and give the people what they can be convinced they want, whether it is good for them or not—just as long as the end result brings in a few more votes.*

The Harris-O'Hara Natural Gas Bill is an excellent example. The pell mell quest for votes on this issue may end up with government control over prices producers receive for natural gas shipped in interstate commerce. In the long run, people living in non-gas producing states will be hurt the most. Their supplies will dwindle as the trend increases to market gas within the state where it is produced.

The entire issue becomes a paradox when you stop to consider that it has been the city officials from the non-gas producing states who have been working the hardest for federal control.

Now a new gap between politics and the truth has entered the picture. In 1955, United Gas Pipe Line Company filed with the Federal Power Commission for permission to raise gas prices in the 600 cities it serves. Memphis was one of those cities. The Memphis distributors told their city officials, in effect: "If we get the new price increase, your voting residents will wind up paying the tab—and they won't like you. So, you'd better hike yourself to Washington, D. C., and do something about it."

And that is just what the city officials of Memphis did. They took the case to the Federal Court of Appeals in Washington. The court, basing its decision on a 1956 Supreme Court ruling, gave them what they wanted. It ruled that natural gas pipe lines cannot raise the price of their product without the customer's consent.

Under the new ruling, the FPC, which previously set natural gas transmission company prices to distributors as stipulated in the Natural Gas Act of 1938, will no longer have that authority. There will no longer be a moderator for the transmission and distributing companies. Instead, the distributors will have sole authority to accept or decline future price increases.

If the lower court's decision is not reversed by the Supreme Court, as requested by the FPC, then you can mark up another classic example of the public being sacrificed for votes. And here are the reasons:

Pipe line companies will naturally find it harder to obtain price increases. Can you imagine the distributor, a retailer just like any store owner in this instance, approving a price increase from the transmission companies (wholesaler) if given the authority to turn it down? If this philosophy is allowed to expand, it is entirely conceivable that the nation's entire marketing concept will be completely reversed. Price determined by cost, profit—even supply and demand will be thrown out the window.

Short term contracts (5-10 years) will replace the present long term (20-30 years) agreements between transmission companies and distributors. Without the guarantee of fair price increases and long term contracts, it will become increasingly harder for pipe line companies to obtain financing necessary for expansion and improvement of service.

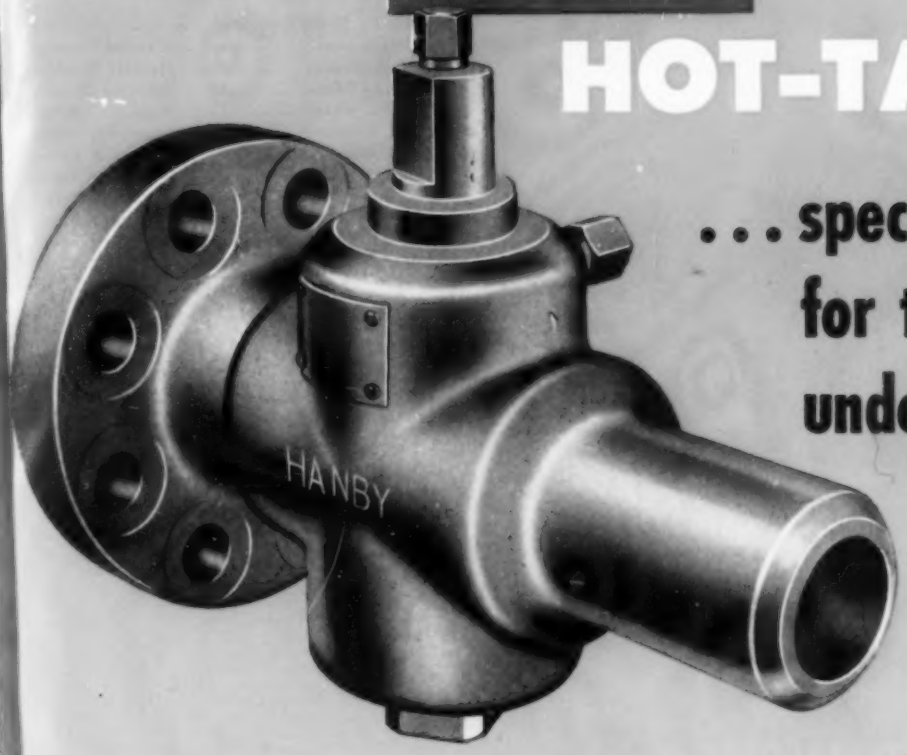
And here comes the paradox again. In the long run, the distributor, who encouraged the ruling in the first place, and ultimately the consuming public —will be the losers. Neither can expect to continue to get adequate supplies of natural gas if there isn't any to be had. You have to pay for what you receive or the supply dries up.

It is acknowledged that we must have city, county, state and national government officials in a democracy. Our nation cannot progress without them.

But, why can't we have politics based on truth—plain old logic and facts? Why do we have to sacrifice the public in favor of votes for those in political offices?

This NEW HANBY HOT-TAP VALVE

. . . specifically designed for tapping gas lines under pressure



GAS TRANSMISSION COMPANIES have been asking for a valve that is *specifically designed* for use in tapping gas lines under pressure . . . and *HERE IT IS.*

BODY . . . is a solid, one-piece forging with no bonnet to leak or bonnet bolts to corrode.

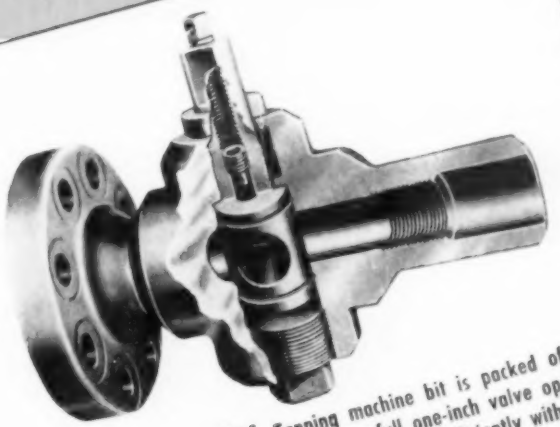
WELD-NIPPLE . . . of 2" diameter, in any desired length, is regularly furnished with 1" female internal threading two inches from the weld-end.

PLUG AND STEM . . . are of one-piece construction.

STUFFING BOX . . . is fully enclosed as part of the body and can be readily re-packed by inserting plastic packing through a removable set screw in the side.

In Addition . . .

. . . to hot-tap applications, this is an excellent blow-down valve for scrubbers and drips or low places in the line. Internal threading permits the use of a 1" syphon to the bottom of the pipe.



HOW IT WORKS! Tapping machine bit is packed off at flanged end and applied through the full one-inch valve opening and welding nipple. When tap is made, bit is sufficiently withdrawn to permit valve closure as shown by cross-section. Connections are then completed and valve re-opened.

Ask an "Oilwell" Specialist in Pipe Line Equipment to show you this Hanby Valve . . . or write for full information.

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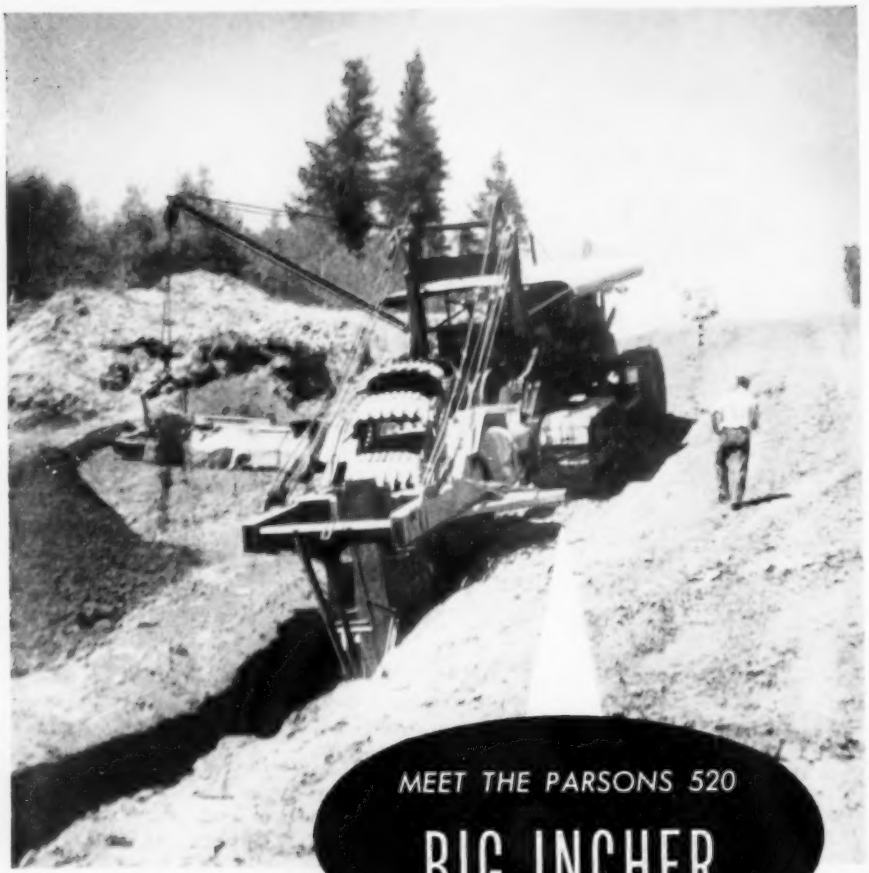

MEET THE PARSONS 520

BIG-INCHER

New 170 wide-wheel Trenchliner digs 20 to 32 inches wide, 5¾ feet deep. It has hydraulic wheel-hoist on power-tilt mast. Conveyor is hydraulically driven — belt speeds are independent of digging wheel speeds. Big Parsons line includes all sizes — wheel-types, ladder-types — on crawlers, and on rubber tires.

Big things have happened since you last bought a big cross-country ditcher! Look at the new sizes recently added to the line of *Trenchliners for pipeliners.* Parsons now brings you a Big-Inch wheel-type 520, with digging speeds up to 28 feet per minute — widths from 40 to 52 inches, depths to 8½ feet. And that's not all —

Also, a MIDDLE-INCHER

Another big-wheel Trenchliner has joined the Parsons line — a Middle-Inch 420, which opens up to 44 lineal feet of trench per minute. It digs 31 to 46 inches wide, at depths to 7½ feet.

Both of these big, heavy-duty machines have been thoroughly *job-proved.* They were formerly built by C-R-C, and now manufactured by Parsons — bringing you the combined engineering experience and services of both firms. Want all the facts? Send for literature today.

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Send us specs. on: ☐ 520 ☐ 420 ☐ 170

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WORLD OIL and THE COMPOSITE CATALOG for the drilling-producing-pipe line industry.

PETROLEUM REFINER and THE REFINERY CATALOG for the refining-natural gasoline-petrochemical industry.

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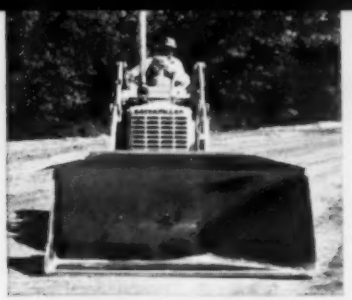
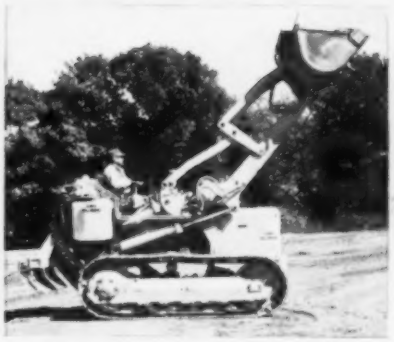
Here  comes...

the TRAXCAVATOR'S  new...

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And you retain all the regular Traxcavator's popular features. Lockout-kickout, bucket positioner, 40-degree tilt-back, one-hand bucket control. No interference, either, with other Traxcavator* attachments when you equip with the new CAT* Side Dump Bucket. Get complete details from your Caterpillar Dealer *now!*

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Bucket capacity	1⅛ cu. yd.	1⅛ cu. yd.
Overall width of bucket	96"	86⅝"
Overall height, side dump	17' 5½"	15' 6 1/16"
Overall height, level	14' 6"	12' 11 1/16"
Left side dump reach	24½"	25½"

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announces

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IN SUBMARINE PIPELAYING!

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System of Distance Measurement
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Extra Services Offered By **COLLINS** Specialists Insures Greater Safety And *Efficiency*—

Accuracy in offshore distance measurement, a thorough knowledge of the bottom, and a means of viewing an underwater operation by observing a monitor screen on deck are extra services which contribute greatly to the ultimate success of each of our submarine pipelaying projects.

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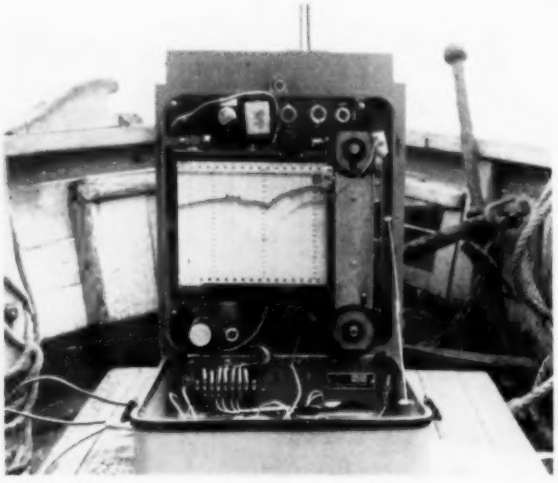
Let these new electronic instruments, along with our patented methods of installation, insure the success of your next submarine pipeline.



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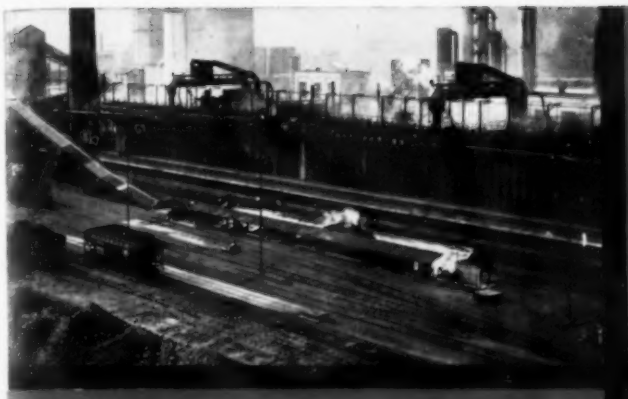

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ON line after line, in all types of terrain and soil, tough, durable *Pitt Chem* Coal Tar Enamels have *proved* their superior ability to provide sure, economical pipeline protection—year after year. But there's *another* big reason why so many companies specify *Pitt Chem* Pipeline Enamels. And that's Pittsburgh's Four-Way service program:

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3. Experienced Sales Service *Pitt Chem* sales representatives are experienced coating men. They talk your language, will help you plan the many requirements of your coating job.

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COAL CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

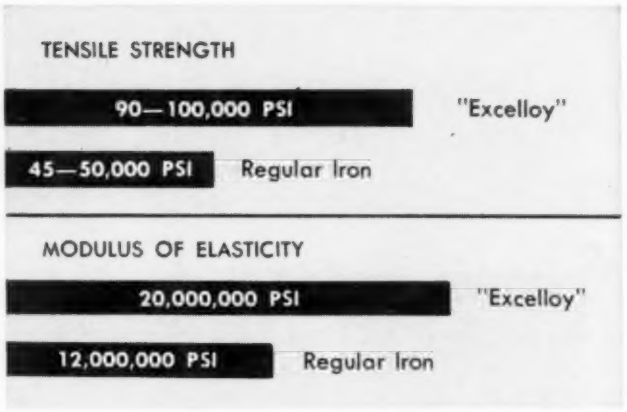
Pedrick Has High Strength Alloy Metal for Top Groove Piston Rings

Supercharging of large-diameter natural-gas and diesel engines is increasing because of the desire for more and more horsepower at minimum extra cost. This trend is evidenced both by the conversion of engines already in service and by the designing and building of supercharged engines at the factories.

Piston rings which are made of conventional piston-ring iron, and which are used in top-grooves of supercharged engines, frequently do not stand up under the heavy loading of high-output engines and breakage occurs. To prevent this, Pedrick uses a high-strength material called "Excelloy" which is centrifugally cast, highly alloyed and heat treated. This material is about twice as strong as regular piston-ring iron. The tensile strength is 90,000 to 100,000 compared to 45,000 to 50,000 psi. The modulus of elasticity is about 20,000,000 compared to about 12,000,000 psi.

The use of high-strength alloy to stop ring breakage in top grooves is a new development for high-output large-diameter engines. It has been thoroughly proven, however, by many years of service in heavy-duty engines used in trucks, buses and tractors.

Pedrick top-compression rings made of this high-strength alloy metal have an extra-heavy plating of chrome on the face which is pre-lapped or run-in at the factory to assure positive and quick ring seating for minimum break-in time.



So, for greatest protection against top-ring breakage in high-output engines, for maximum scuff resistance, quick run-in and longest efficient life, specify Pedrick chrome-plated rings centrifugally cast of "Excelloy" high-strength alloy metal. WILKENING MANUFACTURING CO., Philadelphia 42, and Toronto 2.

Pedrick PISTON RINGS

PEDRICK PIONEERED *Conformable* RINGS FOR BIG-BORE ENGINES

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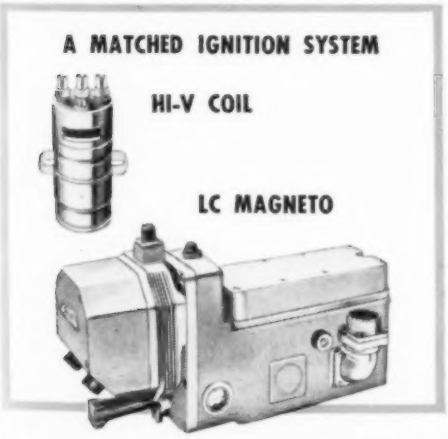
8. Single or dual ignition
9. Flame proof
10. Low maintenance costs
11. For engines of 6 through 16 cylinders

Designed Specifically for the Petroleum Industry



Just check these outstanding exclusive features and you will know why the Bendix* LC Magneto has been engineered to meet the exacting requirements of the modern high-compression gas engines used so widely throughout the petroleum industry.

As the Bendix LC is a completely new type of magneto, it incorporates the latest development in material, engineering, design and production techniques. The result is a matched ignition system—LC Magneto plus Bendix Hi-V Transformer coils—that delivers more than ample voltage with greatly reduced maintenance costs.

For engines of 6 to 16 cylinders where top performance is a must, the new Bendix LC Magneto is the logical choice.

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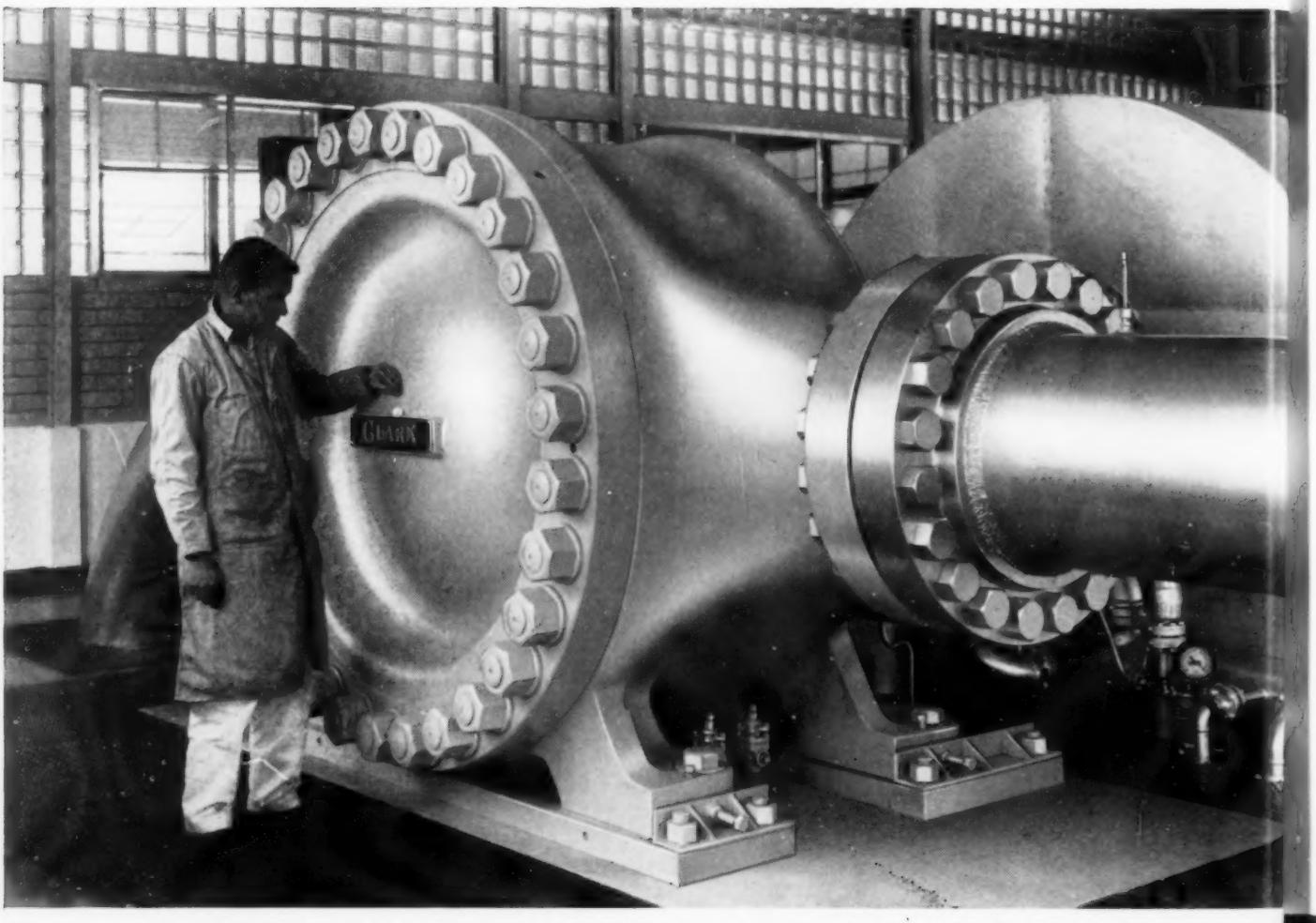

Clark Pipeline Compressors are available in five flange sizes: 12x12, 16x16, 20x20, 24x24, 30x30

Here's What Clark Design Gives You

OVER-HUNG CANTILEVER IMPELLER—Only one shaft seal required.

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INLINE SUCTION & DISCHARGE FLANGES—Simple to install; no additional piping; minimum floor space.

EASILY MODIFIED—Extensive changes in pressure-volume characteristics quickly handled by simple internal modification.

RUGGED CASES—Resist stress from pipe expansion. Extra heavy, fully machined studs on bolt circle.

QUIET—Minimum operating noise; easy on operators.

HIGH OR LOW RATIOS—To match pipeline requirements.

ABILITY

They're the boosters with a built-in future

Clark centrifugal pipeline compressors, designed specifically to meet gas transmission requirements, are built to meet the future.

Now extensive changes in operating conditions can be handled within the same case at minimum cost and without sacrificing efficiency. Clark design permits replacement of the volute, as well as guide vanes and impeller, with components having completely different characteristics.

Key to this versatility is the design of the volute as an insert, not as an integral part of the case. Changes are made quickly—just remove the case cover, pull the insert, install a new one. The unit remains perfectly matched, and no piping modification is required.

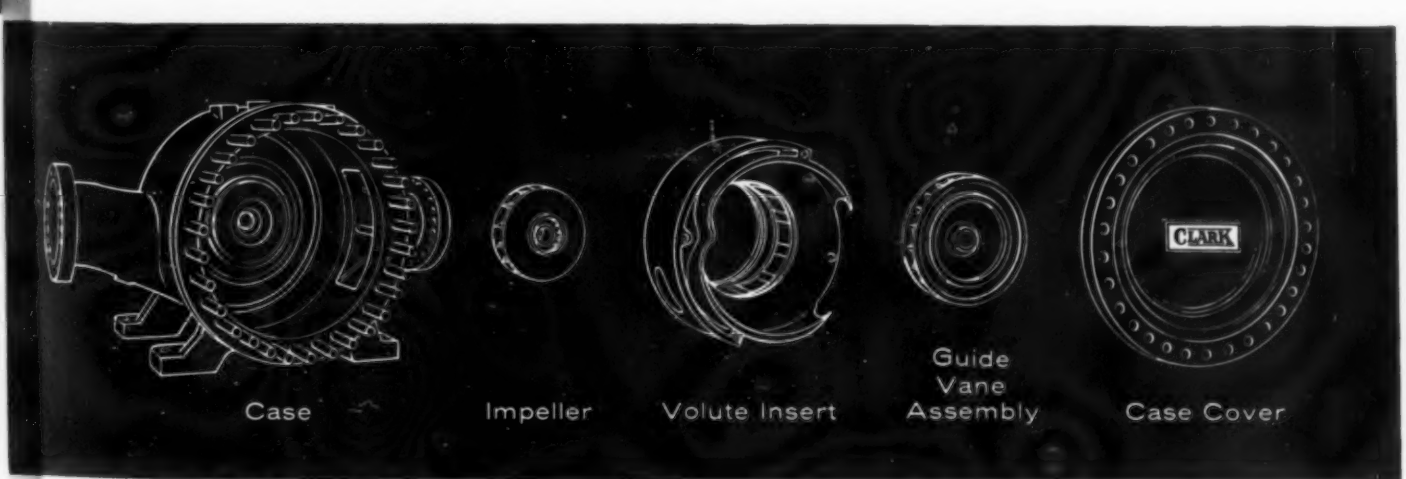
This versatility is supported by other special Clark features. Extra heavy and rugged cases withstand stress from pipe expansion without distortion. A single oil film type seal provides positive, gas-tight sealing during operation and at shutdown.

Many of these units are operating on the nation's gas transmission pipelines, driven by gas turbines, steam turbines or electric motors. They are supported by Clark's encyclopedia of experience. Your nearest Clark office will gladly give you all the facts and figures.

CLARK BROS. CO. • OLEAN, N. Y. *One of the Dresser Industries*
Sales and Service Outlets in Principal Cities Throughout the World

CLARK

Centrifugal Pipeline Compressors



Complete internal assembly is easily interchanged to meet future conditions.

These Pipeline Jobs Profited from Bucyrus-Erie Dragshovels — Yours Can Too!

PENNSYLVANIA — This 22-B dragshovel is one of several digging trench for a 24-in. natural gas line across the northern section of Pennsylvania. On jobs like this, profitable dragshovel service is assured by Bucyrus-Erie top quality construction.

ARIZONA — Heavy digging in malapai rock, conglomerate, and dirt . . . hard going up and down steep grades — these and other conditions gave the 22-B shown here a chance to demonstrate its ability to work fast in any type of digging. It was one of three Bucyrus-Eries working on a 256-mile gas transmission line in Arizona.

NEW YORK—For trenching work, the 22-B may be equipped with tractor-type crawlers which help the machine clear obstacles by raising it higher off the ground. Deep grousers provide good traction in soft material. This gas pipeline job is in downstate New York.

CANADA — To construct a pipeline from the Coleville gas fields to Prince Albert in central Saskatchewan, a new company was formed, drawing experienced men from many areas. These men knew what equipment was best suited to the situation — equipment that could move with a minimum of breakdowns. They chose Bucyrus-Erie. On this 226-mile spread, running through British Columbia and the Yukon Territory, this dragshovel bit through rock, gravel, sand, muskeg and tundra.

Whatever trenching conditions you encounter, you can profit from the extra working ability of a Bucyrus-Erie 22-B dragshovel. From the ground up, these machines are designed and built to put power to work moving dirt with maximum efficiency.

See your Bucyrus-Erie distributor soon for more information on ¾-yd. and other sizes of dragshovels. 386E57

A Familiar Sign

BUCYRUS ERIE

at Scenes of Progress

BUCYRUS-ERIE COMPANY • South Milwaukee, Wisconsin

Let's get technical about WALWORTH LUBRICATED PLUG VALVES for pipeline service

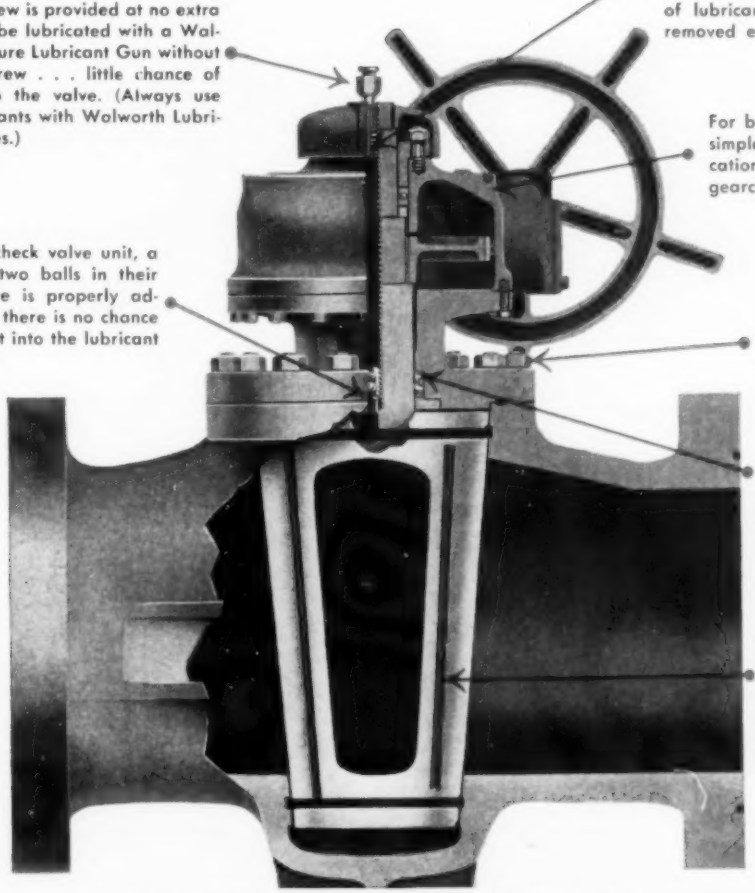
Combination button-head lubricant fitting and lubricant screw is provided at no extra cost. Valves can be lubricated with a Walworth High Pressure Lubricant Gun without removing the screw . . . little chance of grit getting into the valve. (Always use Walworth Lubricants with Walworth Lubricated Plug Valves.)

An added safety feature in the form of a groove cut part way up side of the lubricant-fitting screw allows the operator to observe any tendency of lubricant to blow out before the screw is removed entirely.

For buried pipelines — yoke design permits simple attachment of handwheel and lubrication extensions without modifying the gearcase.

In the stainless steel check valve unit, a transverse pin holds two balls in their seats. When the valve is properly adjusted and lubricated, there is no chance for line pressure to get into the lubricant system.

Standard bolt threads, rather than fine threads, mean easy replacement of nuts and bolts from local stocks.



Two overlapping Teflon packing rings form an effective seal against possible leakage without "grabbing" the plug shank. Low breakout torque . . . plug turns easier. Packing serves only as a seal and is not used to hold the plug in its seat.

Lubricant grooves completely frame the port openings and encircle the plug at the top and bottom assuring a tight seal against leaks. Bottom circumferential groove is separate from, but connected with, the lubricant well.

Other Walworth Lubricated Plug Valves include Single Gland and Regular Gland types. Sizes to 30 inches. Pressures to 5000 psi. and for vacuum service.

Cutaway of a 24-inch Walworth Lubricated Plug Valve

Without exception, a Walworth Ball Bearing Lubricated Plug Valve is easier to operate and maintain than any other type of rotary-action, sealed valve available today for pipeline service. Design features pointed out here show just a few advantages of Walworth Ball Bearing Lubricated Plug Valves.

Many pipeline companies throughout the world use Walworth valves for handling gas, crude, and finished products. Investigate the line of Walworth valves for your own needs. See your Walworth Distributor, or write for literature: Walworth Company, General Offices, 60 East 42nd Street, New York 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

WALWORTH

60 East 42nd Street, New York 17, New York

SUBSIDIARIES: ALOYCO ALLOY STEEL PRODUCTS CO. CONOFLOW CORPORATION GROVE VALVE & REGULATOR CO. SW SOUTHWEST FABRICATING & WELDING CO., INC. MH M & H VALVE & FITTINGS CO. WALWORTH COMPANY OF CANADA, LTD.

FORD makes the b

3 all-new Super Duty V-8's - U

- Gross horsepower up to 277
- Gross torque up to 490 lbs-ft
- Modern Short Stroke design
- Three-stage cooling system
- Machined combustion chambers
- Sodium-cooled exhaust valves
- Stress-relieved block and heads
- Pyramid-type connecting rods
- Internally mounted oil cooler
- Two-quart oil filter
- Water-jacketed intake manifold
- Submerged-type electric fuel pump

277-hp Short Stroke V-8
Torque: 490 lbs-ft
@ 1800-2300 rpm

260-hp Short Stroke V-8
Torque: 430 lbs-ft
@ 1800-2300 rpm

226-hp Short Stroke V-8
Torque: 350 lbs-ft
@ 1800-2300 rpm

10 all-new Extra Heavy Duty Series

GVW's up to 51,000 lb. For '58, ten new basic series are added to Ford's already extensive Heavy and Extra Heavy Duty line. Four new Tilt Cabs, four new Conventionals, and two new Tandem models offer GVW ratings up to 51,000 lb.

GCW's up to 75,000 lb. New T-950 Tandem is rated for 75,000-lb. GCW. Biggest single-rear-axle models are rated for 65,000-lb. GCW.

Front axle capacities up to 15,000 lb. Choice of three front axles in most new Ford Extra Heavies. Rated capacities of 9,000 lb., 11,000 lb. and 15,000 lb.

Rear axle capacities up to 29,000 lb. Wide choice of rear axles includes single-speed and two-speed, single reduction and double reduction types. Capacities range from 18,000 lb. to 29,000 lb.

Bogie axle capacities up to 38,000 lb. For '58 there are two new Extra Heavy Duty Tandem Axle models. The new T-950 Series features a tandem rear axle assembly rated for 38,000 lb. New T-850 Series offers choice of 28,000- or 34,000-lb. bogies.

New highway transmissions. Roadranger transmission is available in all ten new Ford Heavies and Extra Heavies. Up to 33% less shifting. "Short Fourth" highway transmissions also available on "F" and "C" Series. With these new transmissions, engines operate in peak horsepower range with greater fuel economy.

big move for '58

s - up to 534 cu. in.

New Series T-950 Tandem model is biggest capacity Ford truck ever built! Rated up to 51,000-lb. GVW—75,000-lb. GCW. New 534-cu. in. Super Duty V-8 provides exceptional horsepower and torque with rugged durability.

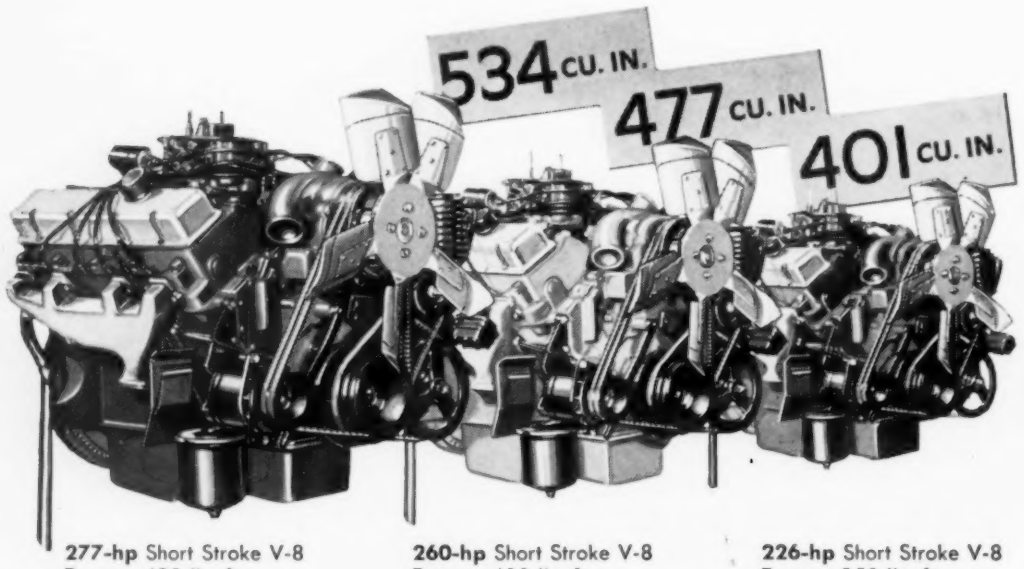
FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

FORD makes the b

3 all-new Super Duty V-8's - U

- Gross horsepower up to 277
- Gross torque up to 490 lbs-ft
- Modern Short Stroke design
- Three-stage cooling system
- Machined combustion chambers
- Sodium-cooled exhaust valves
- Stress-relieved block and heads
- Pyramid-type connecting rods
- Internally mounted oil cooler
- Two-quart oil filter
- Water-jacketed intake manifold
- Submerged-type electric fuel pump



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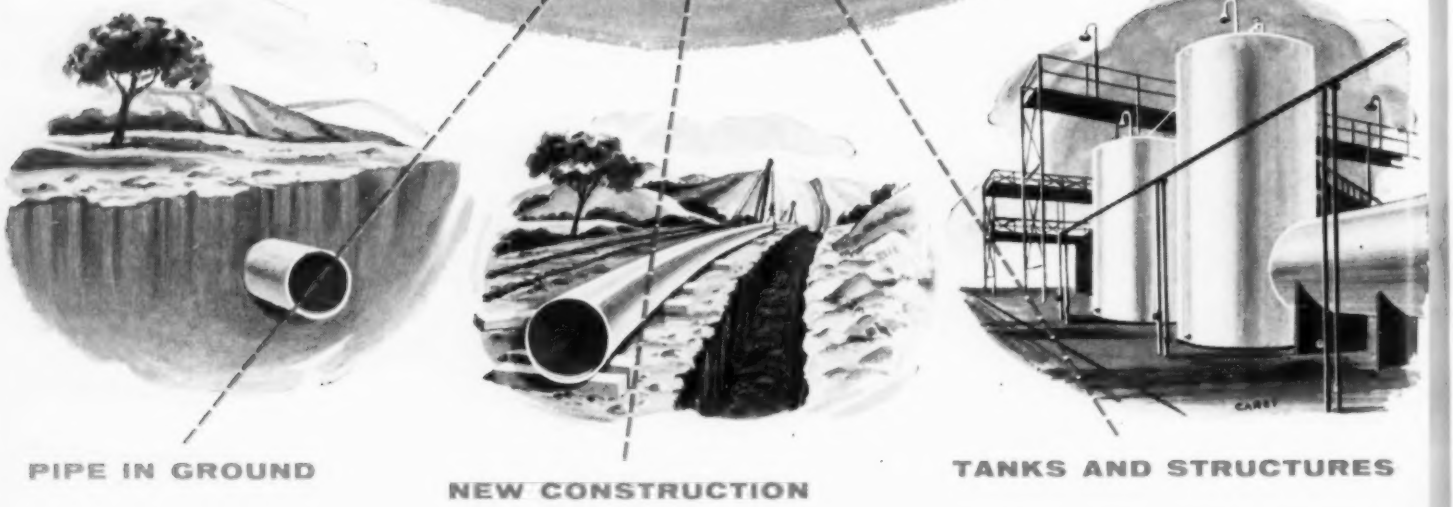
FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

Whatever your coating problem



PIPE IN GROUND

NEW CONSTRUCTION

TANKS AND STRUCTURES

look to Copon® for a solution

Proven systems for external or internal protection of...

- Dehydrated gas lines
- Crude and petroleum product lines
- Salt water lines
- Fresh water lines
- Oil well tubing and casing
- Repressuring units

In every phase of the oil and gas industry, Copon Coatings are doing a job reducing corrosion losses. But in many instances, they are accomplishing even more.

Gas transmission companies report smooth, durable Copon Internal Pipe Coatings provide extra dividends of increased thru-put, cleaner delivery and reduced pigging costs. Installations at pumping plants and refineries prove Copon External Tank Coatings stay dazzling white despite exposure to severe atmospheric conditions, chemical fumes and spillage.

Copon Coatings, and systems for coating underground pipe lines in place or individual joints for new construction, have been developed in close cooperation with leading corrosion engineers. A complete technical service is available. Write today for help with your specific problem.

Copon®

FOR CORROSION CONTROL

For complete information on Copon, write on your company letterhead to the manufacturer located nearest your city.

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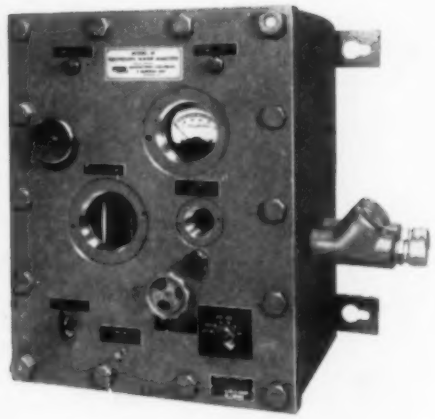
P. O. Box 8010, Pittsburgh 16, Pa.

Which of these Model W ELECTROLYTIC MOISTURE ANALYZERS do you need?

STANDARD UNIT

Shown with Model A Oil Separator and Model I Vaporizing Valve mounted on side panel.



EXPLOSION-PROOF UNIT

Available with or without thermostatic controls.

Many other types also available for measuring moisture content down to better than 1 part per 1,000,000!

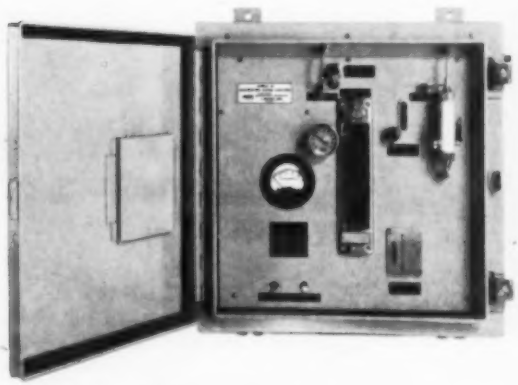
Rapid adoption of the *Meeco* Model W Electrolytic Moisture Analyzer has made possible the introduction of many different types — to fit most any requirement you have.

New types (in addition to those shown) include relay rack units . . . units for flush panel mounting . . . and units for measuring moisture in liquids — in either standard or stainless steel construction.

Instruments for automatic control of moisture content of gases are also available.

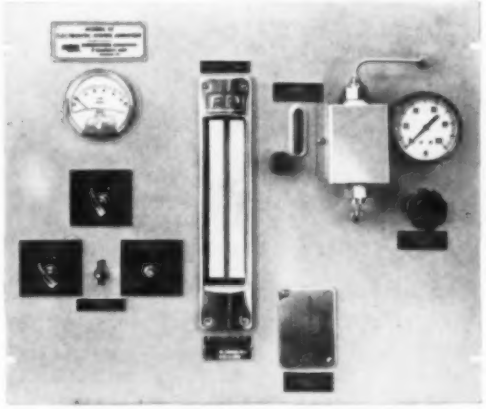
Any of these units can be obtained with calibration in parts per million by volume or pounds per million standard cubic feet. All are available in extended ranges, and measure moisture content of a versatile range of gases on an absolute basis. Conversion curves to dew point indication can be obtained on request.

Write us today for complete information on the model that is best suited for your own particular purpose.



WEATHER-PROOF UNIT

For fixed or portable installation — available with or without thermostatic controls and insulation. Battery operation optional.



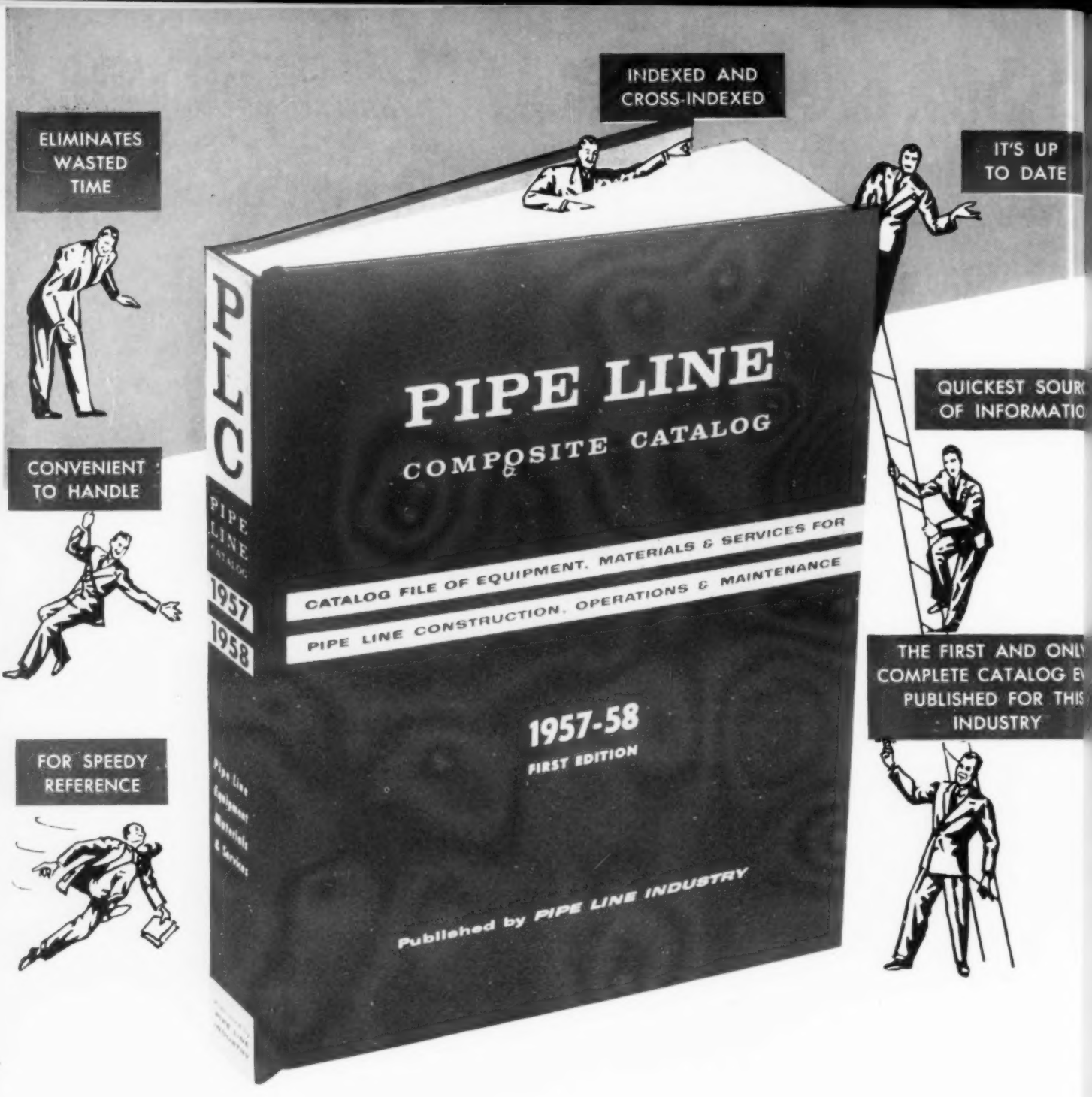
TYPICAL RELAY RACK PANEL UNIT

Shown with Model I Vaporizing Valve.

MANUFACTURERS ENGINEERING & EQUIPMENT CORP.

Hatboro • Pa.

MEECO Instruments



The first catalog data file ever published especially for the Pipe Line Business is a real success. It is serving as a genuine time saver for operating and field executives, superintendents, foremen, engineers, purchasing agents and many others who buy or specify equipment and materials.

Almost 150 leading companies have filed their complete or condensed catalogs in this useful first edition. Compiled by the manufacturers themselves, this information is arranged and indexed to offer a quick and convenient means of locating *what you want when you want it.*

If furnished to you in individual brochures, bulletins or specification sheets, the information that is now condensed into this composite catalog file would fill the equivalent of several file drawers or book shelves.

On the opposite page you'll find a complete list of the companies that have filed data in the new, specialized PIPE LINE COMPOSITE CATALOG. When you are looking for sales information, be sure to check these companies in your PIPE LINE COMPOSITE CATALOG. It is the most complete source of buying information available in one volume for this industry today.

ACF Industries, W-K-M Division
The Aerotec Corp.
M. N. Aitken Co.
Alco Products, Inc.
Aldrich Pump Co.
Allied Chemical & Dye Corp., Barrett Division
Allis-Chalmers
Alston Manufacturing Co.
American Blower Division of American-Standard
American Cyanamid Co., Jefferson Chemical Co. Subsidiary
Anchor-Wate
Automatic Power Inc.

Barber-Greene Co.
Barrett Division, Allied Chemical & Dye Corp.
J. B. Beaird Co., Inc.
Berry Hydraulics, Oliver Tyrone Corp.
Bethlehem Supply Co.
Bettis Corp.
Books for Pipe Line Industry
Borg-Warner Corp., Byron Jackson Div.
Bramble Industries, Gulf States Asphalt Co. Division
Bucyrus-Erie Co.
Buffalo-Eclipse Corp., Penberthy Manufacturing Co. Division
G. T. Bynum Co.
Byron Jackson Pumps, Inc., Subsidiary of Borg-Warner Corp.

E. L. Caldwell Co.
Philip Carey Mfg. Co.
Caterpillar Tractor Co.
Cathodic Protection Service
Central Plastics Co.
Clark Bros. Co., One of The Dresser Industries
Coffing Hoist Division, Duff-Norton Co.
Colorado Fuel and Iron Corp., Wickwire Rope Division
Commercial Iron Works
Cook Bros. Equipment Co.
C. Lee Cook Co., Division of Dover Corp.
Corrosion Rectifying Co., Inc.
G. A. Cotten Co.
M. J. Crose Manufacturing Co., Inc.
Crutcher-Rolfs-Cummings, Inc.

Darling Valve & Manufacturing Co.
John Deere—Industrial Division
Dover Corp., C. Lee Cook Co. Division
Dresser Industries, Clark Bros. Co. Division
Magnet Cove Barium Corp. Division
Drive-Thru Gate Co.
Duff-Norton Co., Coffing Hoist Division
Dutch Brand Division, Johns-Manville Corp.

Allan Edwards, Inc.
Elliott Co., Ridgway Division
Embart Manufacturing Co., The Maxim Silencer Co. Subsidiary
Engineering Research Corp.

Falk Corp.
Farrel-Birmingham Co., Inc.
Federal Telephone and Radio Co., Division of International Telephone and Telegraph Corp.
Fish Engineering Corp.
Flexitallic Gasket Co.
Fluor Products Co., Division of Fluor Corp., Ltd.

Gardner-Denver Co.
Gaso Pump & Burner Mfg. Co.
Gearench Mfg. Co.

These leading manufacturers, suppliers and service companies have filed complete or condensed catalog data in the first (1957) edition of the new PIPE LINE COMPOSITE CATALOG. See their detailed information in the catalog when you are ready to buy.

General Electric Co.
The Gorman-Rupp Co.
Granberg Corp.
Greenhead Sling and Supply Co.
Greenwood Valve Division, Vernon Tool Co., Ltd.
Grove Valve and Regulator Co.
The Gulf Publishing Co. (Pipe Line Forms)
Gulf States Asphalt Co., Division of Bramble Industries

H & L Tooth Co.
H & M Pipe Beveling Machine Co.
Hamer Valves Inc.
Hammond Iron Works
Haynes Manufacturing Co.
Hercules Motors Corp.
Holcombe Co., Inc.
Homelite, Division of Textron Inc.
Houston Equipment Co., Inc., Division of Houston Foundry & Machine Co.
Hudson Engineering Corp.
Humble Oil & Refining Co.
Hydril Co.

Ingersoll-Rand Co.
International Telephone and Telegraph Corp., Federal Telephone and Radio Co. Division

Jefferson Chemical Co., Subsidiary of American Cyanamid Co.
Johns-Manville Corp., Dutch Brand Div.

King Tool Co., Ltd.
Kinzbach Tool Co., Inc.

L & M Company
L-K Pump Valve Co.
Ledeen Mfg. Co.
LeRoi Division, Westinghouse Air Brake Co.
Lloyd Metal Foundry
Lubrikup Co., Inc.
Lufkin Foundry & Machine Co.

Magnet Cove Barium Corp., One of the Dresser Industries
Magnetrol Inc.
S. N. M. A. R. E. P.
Marsh Instrument Co.
Mason-Neilan Division of Worthington Corp.
C. A. Mathey Machine Works, Inc.
Mavor-Kelly Co.
Maxim Silencer Co., Subsidiary of Embart Manufacturing Co.
McFarland Engineering & Pump Co.
McFarland Manufacturing Corp.
McKissick Products Corp.
Mercoid Corp.
Midwestern Pipe Line Products Co.
Mine Safety Appliances Co.
Mixing Equipment Co., Inc.
Modern Motors Sales & Service
Morris-Young-Owens Co.
Mountain States Asphalt Co., Division of Bramble Industries

Multiple Corp.
Frank W. Murphy, Manufacturer, Inc.

National Cylinder Gas Co., Tube Turns Division
National Tank Co.
Naylor Pipe Co.
Nickles Machine Corp.

Oliver Tyrone Corp., Berry Hydraulics
Oil Well Supply Division, United States Steel Corp.

Panellit, Inc.
Peerless Manufacturing Co.
Pelican Supply Co., Inc.
Penberthy Manufacturing Co., Division of Buffalo-Eclipse Corp.
Perrault Equipment Co.
Petrolite Corp., Tretolite Co. Division
Pipe Line Development Co.
Pipelife Corp.
Pittsburgh-Des Moines Steel Co.
Plyon QX, Modern Motors Sales & Service
Porter Co.
Potter Aeronautical Corp.
Protecto Wrap Co.
Pye Telecommunications Ltd.

Quality Marsh Equipment Co., Inc.

Ramsey Winch Manufacturing Co.
Reilly Tar & Chemical Corp.
Remco Manufacturing Co.
Ridgway Division, Elliott Co.
Rochester Manufacturing Co., Inc.

Schramm, Inc.
SHMCO Valves Inc.
M. B. Skinner Co.
Snelling Manufacturing, Inc.
Southern Mill & Manufacturing Co.
Sprague Engineering Corp.
Staytite Co.
D. E. Stearns Co.
N. C. Stearns Co.
Steel Forgings, Inc.
Superior Equipment Co.

Taylor Instrument Companies
Textron Inc., Homelite Division
Thermix Corp.
Thornhill-Craver Co., Inc.
Tinker & Rasor
Tretolite Co., Division of Petrolite Corp.
John D. Trilsch Inc.
Tube Turns, Division of National Cylinder Gas Co.

United States Motors Corp.
United States Steel Corp., Oil Well Supply Division

Vernon Tool Co., Ltd., Greenwood Valve Division
J. H. H. Voss Co., Inc.

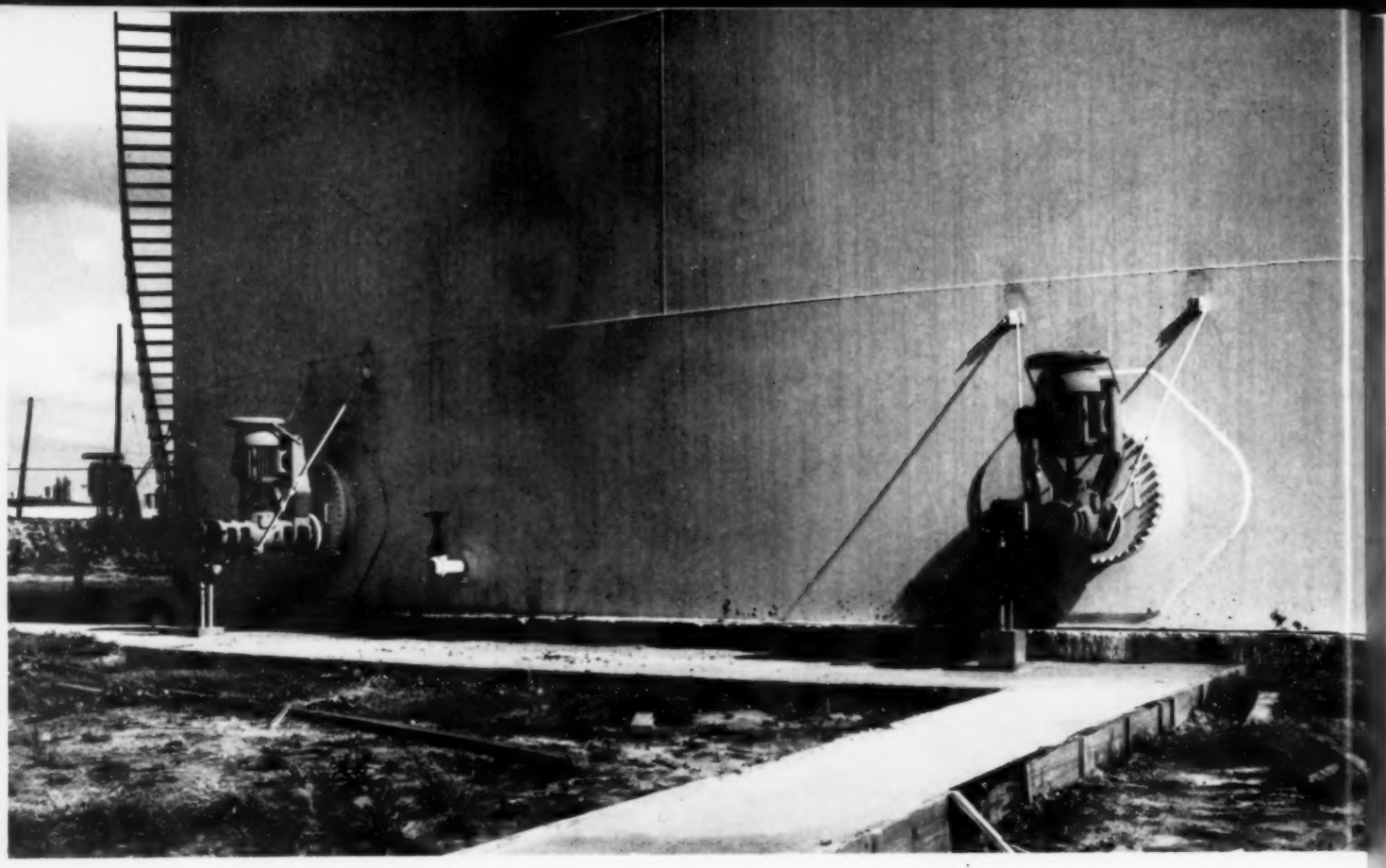
W-K-M Division of ACF Industries, Inc.
E. H. Wachs Co.
John Waldron Corp.
Waukesha Motor Co.
Westinghouse Air Brake Co., LeRoi Division
Frank Wheatley Pump & Valve Mfr.
White Diesel Engine Division, The White Motor Co.
Whitmor Homebuilders, Inc.
Wickwire Rope Division, The Colorado Fuel and Iron Corp.
Wilkinson Products Co.
Worthington Corp.
Worthington Corp., Mason-Neilan Division

Yale Machine Works

PIPE LINE COMPOSITE CATALOG

Published by PIPE LINE INDUSTRY

P. O. BOX 2608 **HOUSTON, TEXAS**



You save $1000 per tank per year

when you keep bottoms clean by pressing a button

Take a minute to add up what it costs you to clean out the sediment in an 80,000-barrel crude storage tank.

The answer—5000 to 8000 dollars—may amaze you. Yet these figures are based on careful field studies by a major pipeline company.

Your total cost includes:

- what you pay for cleaning
- your overhead while the tank is out of service
- value of refinable oil and wax you lose in the bottoms (at least $2000—and sometimes as high as $6000).

Fortunately, this is one expense you don't have to accept. Prevention is easy. Put LIGHTNIN Mixers on your tanks, and start enjoying savings *on the order of $1000 per 80,000-barrel tank per year.* Savings on larger tanks are equally spectacular.

No need to scrape out sludge

You eliminate sludge buildup—for good—when you install LIGHTNIN Mixers. By pressing a switch button, you start the tank contents in gentle motion that keeps sediment suspended in the crude, or resuspends any that has settled. You can keep bottom sediment level, year to year, as low as *one inch.*

You dispatch a more uniform crude when you use LIGHTNINs in your tanks. Crude leaving the tank has the same values as when it entered the tank. You overcome the risk of large slugs of accumulated sediment breaking loose and moving into the pipeline.

By eliminating downtime for sludge cleanout, you keep your tank farm's *full holding capacity* ready for use when you need it. You gain as much as 12% more storage capacity—without adding a single tank.

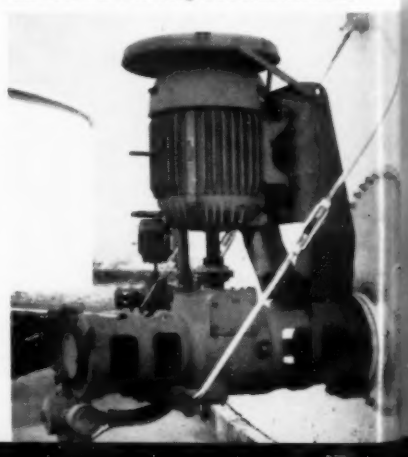
Do this today

More than 50 independent pipeline companies and about 35 leading producers and refiners are cutting crude storage costs this effortless LIGHTNIN way. So can you! To see how, just call in your LIGHTNIN Mixer representative (listed in Pipeline Composite Catalog). Or write us direct.

Lightnin® Mixers

MIXCO fluid mixing specialists

LOW OPERATING COST. It takes as little as one hour to suspend sediment in a full tank. Upkeep is simple; choice of stuffing boxes to meet your conditions, or mechanical seals that eliminate stuffing-box maintenance.



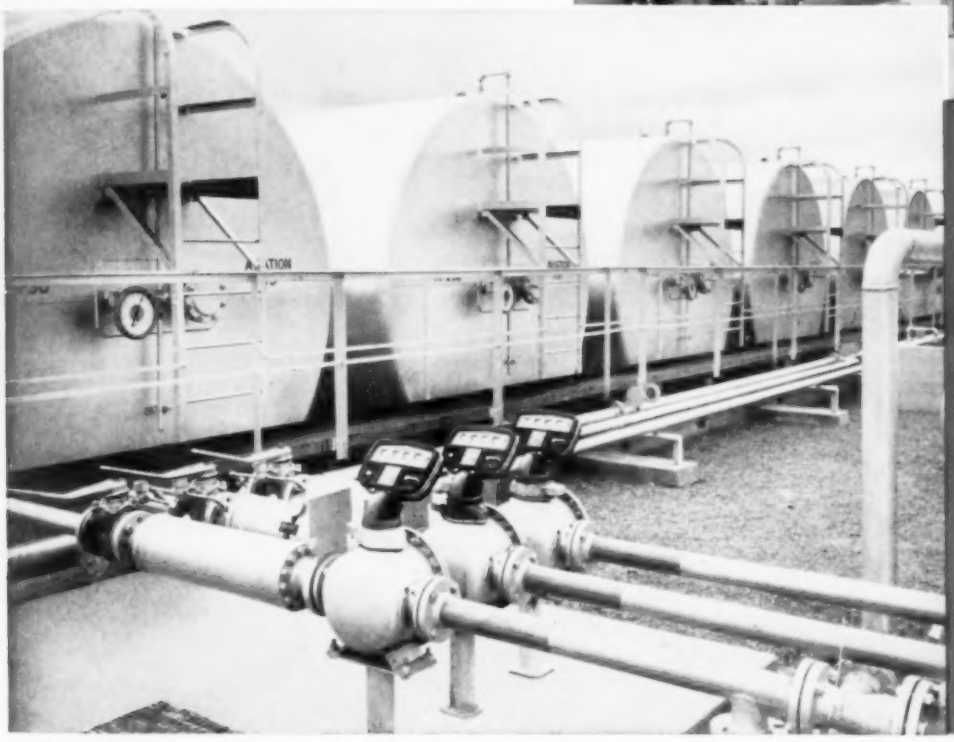
Get these helpful bulletins on BS&W control and LIGHTNIN Mixers. Check, tear out and mail to us today with your name and company address. Free—no obligation.

- ☐ BS&W Control with LIGHTNIN Mixers (B-503)
- ☐ Side entering mixers, 1 to 25 HP (B-104)
- ☐ Data sheet for figuring mixer requirements (B-107)
- ☐ Condensed catalog describing LIGHTNIN Mixers—all types (B-109)
- ☐ LIGHTNIN rotary mechanical seals for extra-low-cost mixing (B-111)

MIXING EQUIPMENT Co., Inc., 196-a Mt. Read Blvd., Rochester 11, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Avenue, Toronto 10, Ont.

BRODIE pipeline meters record millions of gallons of aircraft fuel pumped to "satellite" storage



45° Angle Adaptors provide full visibility of the easy-to-read Brodimatic Counters from all operating and control positions.

Each of three *BiRotor* Meters is manifolded to two "satellite" storage tanks which supply loading racks for delivery through four additional *BiRotor* Meters to tank truck refuelers.

From Shell's main storage at the barge terminal two miles away, fuel is pumped daily to six "satellite" tanks at San Francisco International Airport. Three Brodie *BiRotor* Meters provide accurate records of every gallon received, simplifying control of input.

In critical services of this type, the sustained accuracy and low maintenance of *BiRotor* Meters is important. For only *BiRotors* offer the vibration-free, friction-free performance of true rotary operation with just two moving parts and no metal-to-metal contact in the measuring chamber. Ruggedness of double-case construction with welded steel housing give extra margins of safety. Accessible unit-built assemblies allow fast inspection, cleaning, service or replacement without disturbing line connections. Whatever your metering needs, consult your Brodie Metering Specialist today.

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TD-24 Sidebooms exceed daily p

—for Midwestern Constructors, Inc., Tulsa, Okla.

Midwestern sets a stiff cold-weather, short-day goal of 4,000 feet of 34-inch gas line in the ditch daily.

And then their spread, racing winter to lay a new Texas-Illinois line from Morris, Illinois, to suburban Chicago, beats their schedule up to 60%—by laying up to 6,400 feet in a 10-hour day!

International Superior TD-24 sideboom performance paces this fast-moving crew! A TD-24 on cleaning—another TD-24 on dope—four TD-24's on lowering-in—two TD-24's on tie-in and miscellaneous—and a TD-24 out front 'dozing obstructions off the right-of-way!

Full-time schedule-beating TD-24 exclusives!

Midwestern beats soft going with TD-24's exclusive margin of flotation—up to 18% less weight psi on the tracks than other crawlers exert! Exclusive TD-24 Planet Power steering assures full-time "live" power on both tracks—to turn smoothly with heavily-loaded boom.

Exclusive TD-24 fingertip hydraulic braking and foot decelerator give precision pipe-carrying control. Exclusive spread-speeding, on-the-go TD-24 Hi-Lo shifting gives fingertip matching of speed to load—avoids delay, increases production. Exclusive reach-easy controls in vertical cluster, add operator convenience and control accuracy!

Add up these and all the other big, full-time pipe-handling exclusives you get in an International Superior TD-24 sideboom. See how these performance features increase capacity, reduce downtime, boost manpower efficiency. And compare how bonus-powered TD-18, TD-14, and TD-9 sidebooms also out-perform all other crawlers in their size classes. See your International Superior Distributor for a demonstration of the boom and tow equipment you need.

Here are four of "Midwestern's" TD-24 sideboom lowering-in, on a stretch of the Morris-to-Chicago g line. "I've had TD-24 booms since '53," states E. Wolfe, lowering-in foreman. "I like the TD-24 s cause it gathers up a lot of this big pipe, and s is easy to operate."

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ly pipe-laying schedule up to 60%

View below shows the TD-24 cradling for the CRC doping machine, which is powered with an International U-372 engine. "In all my 30 years of pipe-laying operations, I find the International TD-24 boom tractor the most advanced and best balanced I ever had," states spread superintendent, John Works.

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A Library Of Practical Ideas

Pipeline Corrosion And Cathodic Protection

By Marshall E. Parker

This book is designed as a practical field manual. It contains comprehensive material on soil resistivity surveys, potential surveys, ground bed design, magnesium anodes, stray current electrolysis, interference in protective systems, operations and maintenance, and coating protection and testing. The appendix provides data on underground corrosion, basic principles of cathodic protection, properties of metals and attenuation equations.

1954, 108 pages.....Price $3.00

Engineering Materials Manual

Edited By T. C. Du Mond

Complete descriptive information and reference data are given on every engineering material of interest to industry, both metals and nonmetallic materials. The volume comprises 28 sections, each presenting the complete story on a single material or group of materials. There are sections on irons, steels, stainless steels, aluminum, magnesium, copper alloys, plastics, rubber, ceramics, several types of finishes and coatings and many others. Important engineering material and information essential to engineers and others interested in materials is included.

1951, 386 pages.....Price $7.50

Extrusion of Plastics, Rubber and Metals

By Herbert R. Simonds, Archie J. Weith and William Schack

Offers a comprehensive coverage of extrusion as an important processing operation. The first part of the book is devoted exclusively to the extrusion of plastics. Here the versatility of the extruding machine as an industrial unit is fully described and the many applications of extruded plastics are discussed. The remainder of the book focuses attention on extrusion of metals (sheet, rods, billet, etc.) and such materials as rubber, ceramics, graphite, and even ice.

1952, 470 pages.....Price $11.00

Plastics For Corrosion-Resistant Applications

By Raymond B. Seymour and Robert H. Steiner

Book supplies engineers with background information necessary in selecting proper plastic for construction in corrosive atmospheres. It begins by describing relationships between chemical and physical properties and molecular structure of plastic materials. Then follows expert information on use of plastics as protective coatings, organic linings, chemical resistant mortar cements, casting resins, plastic foams, impregnants, industrial adhesives and reinforced materials. Other sections describe plastic pipe, ductwork, valves, and fittings, and the use of plastics for corrosion-resistant floors, sumps and processing vessels.

1955, 449 pages.....Price $7.50

Protective Coatings for Metals (2nd Edition)

By R. M. Barns and W. E. Bradley

Book contains information on composition, properties and performance of both metallic and organic coatings. Chapters are devoted to subjects such as inhibitors, chemical conversion coatings and sprayed metal coatings.

1955, 657 pages.....Price $12.00

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By Edmund C. Berkeley and Lawrence Wainwright

All the practical, down-to-earth information you need on exactly how automatic computing machines work and what they can do. Basic elements of digital, analog and miniature computers are fully explained, as are such important considerations as computer reliability, advantages, limitations and maintenance.

A section of the book is devoted to present and potential applications of computing machines.

Important features include: a convenient check list of computer characteristics; listing of books, periodicals, papers and organizations offering further information on all aspects of automatic computing machinery; names and addresses of organizations from whom automatic computing equipment may be purchased or rented; a large glossary of terms and expressions used in the automatic computing and allied fields. This book is packed with details on how computers are constructed. It can be of real value for determining where computers can fit into your operation and how they can be obtained.

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Tubing stretch mill, Youngstown, Ohio. Electronically controlled mill to be completed during second quarter of 1958 . . . will provide increased production for Tubing comparable to our increased capacity for Casing. Both Upset Finishing Mill and this facility will greatly augment our existing No. 1 and No. 2 Seamless Mills in Youngstown. Photo shows mill building under construction.

NEW MILLS FOR BIGGER MARKETS

Two years ago, ground was broken for our three new seamless Pipe facilities. The express purpose of this massive expansion program was to make YOUNGSTOWN'S production capacity and seamless pipe product mix conform to the future needs of the Oil and Gas Industries. These seamless pipe facilities are now integrated with your demands. This means you can look to YOUNGSTOWN for a full line of Oil Country Tubular Goods without limitations as to size, grade or finish in Drill Pipe, Casing, Tubing and Line Pipe!

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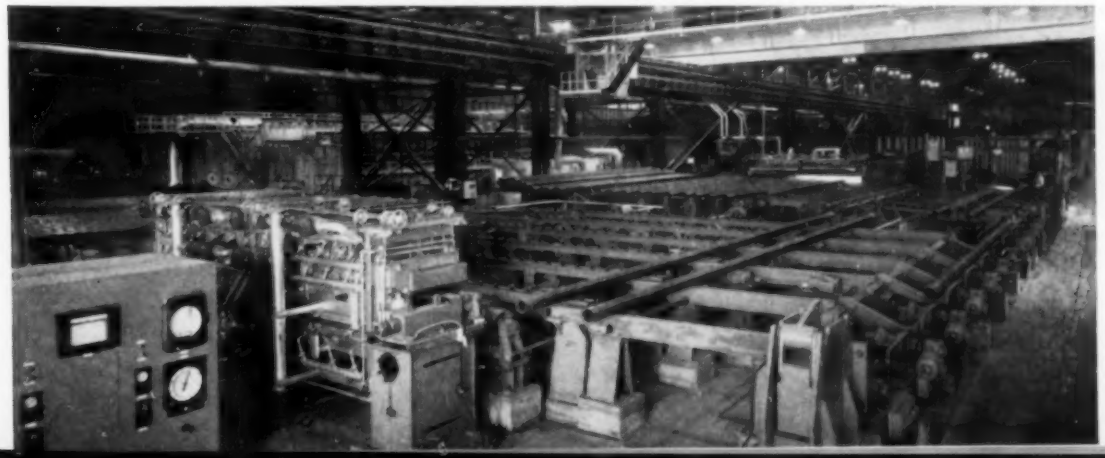
Manufacturers of Carbon, Alloy and Yoloy Steels

Youngstown, Ohio

No. 3 seamless mill, Indiana Harbor, Indiana. Fully automated, ultra modern mill . . . began operating September 30. Contains world's largest Rotary Billet Heating Furnace . . . adds to our over-all capacity in both alloy and carbon casing. Offers API casing in sizes 4½", 5", 5½" and 7", in grades H-40, J-55, N-80, in ranges 2 and 3 . . . plus line pipe in sizes 4½", 5$^{9}/_{16}$" and 6⅝" O.D. in grades A, B, X-42, A106, A53 in single and double random lengths. Photo shows Rotary Furnace in foreground.

Upset finishing mill, Youngstown, Ohio. Also a fully automated mill began operations September 15. Contains a pair of automatic upsetters with attendant furnaces plus a full-length normalizing furnace for highest quality control of all products. This mill adds to our capacity for Drill Pipe in grades D, E, x-95 and in Upset Casing (Speedtite). Photo shows upsetter and control panel in foreground, normalizing furnace in left rear.



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Trouble-Free Motorized Valve Operation

Why not be modern and thrifty too,—follow the example of hundreds of plants of all types. *Convert* your present hand-operated valves to LimiTorque "push-button control"—*save time, labor and money.*

In most instances, LimiTorque conversion requires only minor changes to the valve. Your LimiTorque Valve Operators can be furnished as a completely packaged unit including electrical controls and push button. Simply wire the power leads to your source of electricity.

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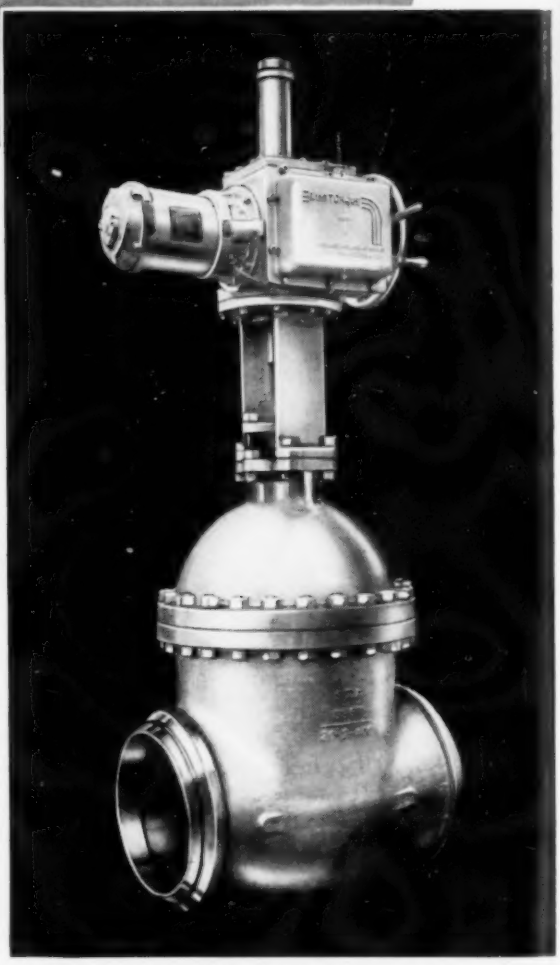
In addition, LimiTorque protects seats, discs and stems from damage, by automatically shutting-off power source should an obstruction interfere with valve closing. LimiTorque-operated valves are always seated tightly because the valve disc seating thrust is accurately maintained in each closing-cycle, through a micrometer-adjusted torque limiting mechanism.



LimiTorque can be field-mounted on your existing valves—contact your valve manufacturer or nearest LimiTorque sales-engineering office.

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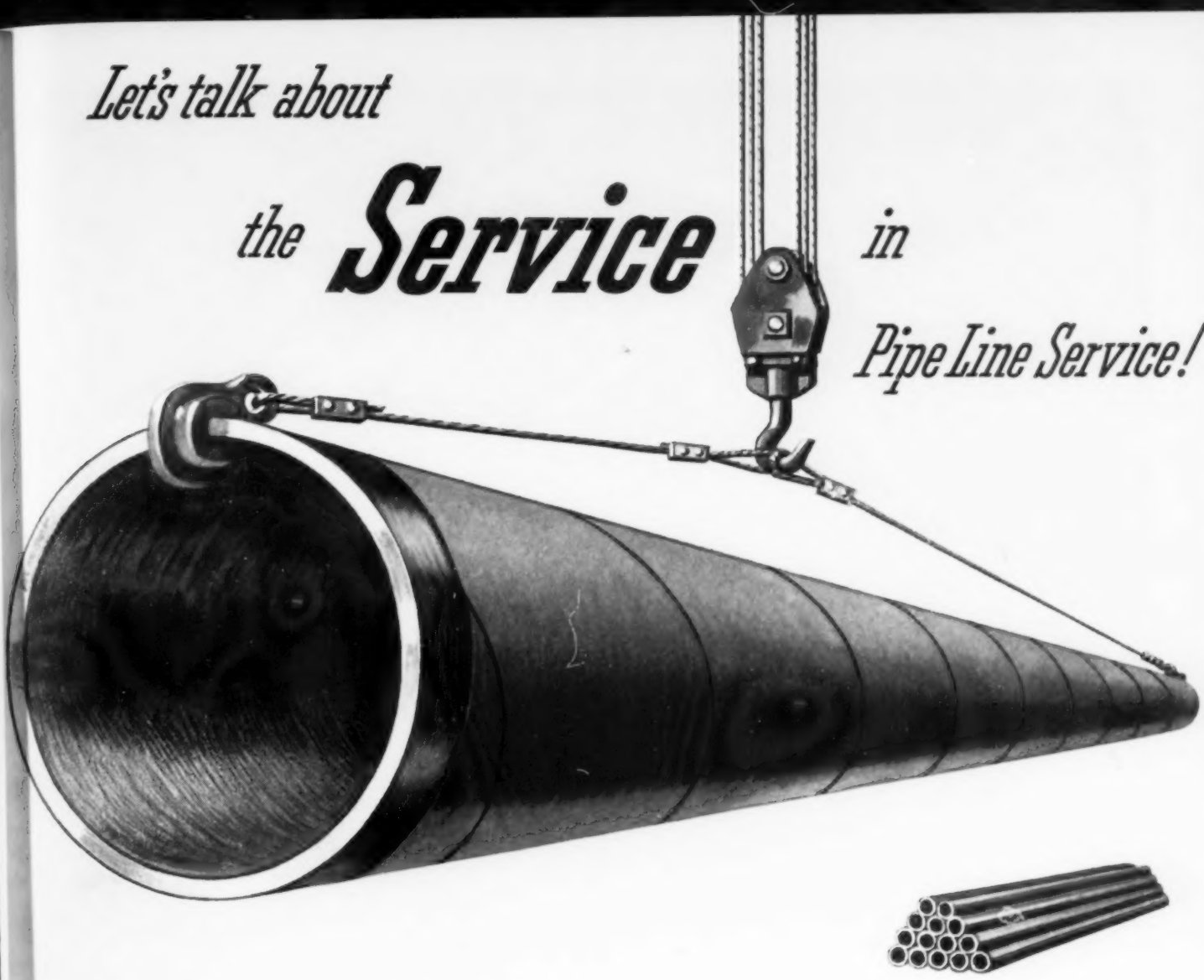
Let's talk about the **Service** *in Pipe Line Service!*



A company doesn't become a leader through quality of product alone. Although Pipe Line Service through the years has proved consistently that quality depends on coating and wrapping under controlled plant conditions, *service* is half the battle.

By service, we mean storing your pipe *at no cost to you* . . . plants strategically located near your sources of supply . . . and large storage facilities to allow you to purchase pipe when delivery is most favorable. Your pipe will be held in storage until needed—and then coated under the PLS high standards of uniformity. You *always* get a freshly applied coating job at the time pipe is ready to be laid. And PLS will ship your protected pipe *where* you want it . . . *when* you want it!

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This combination of quality *and* service assures you of the finest in pipe protection. On your next coating job call in your nearest PLS representative—you'll find that he can save you time, trouble and money.

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FOR PIPELINES IN CASINGS

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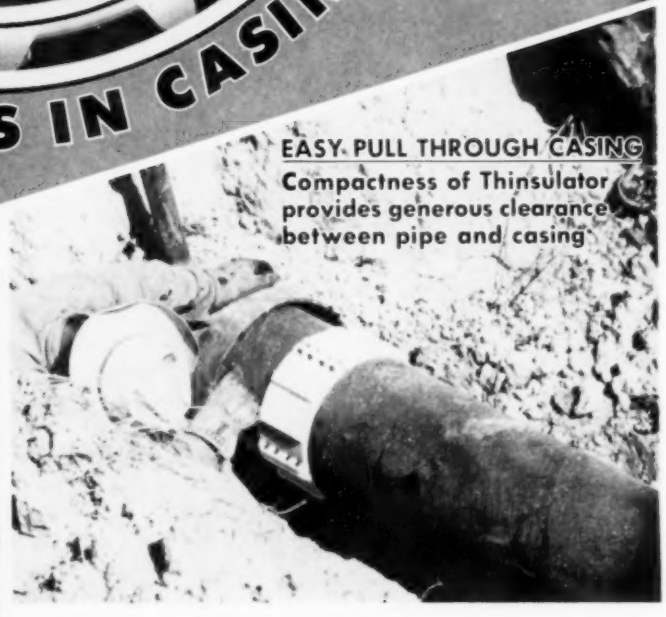

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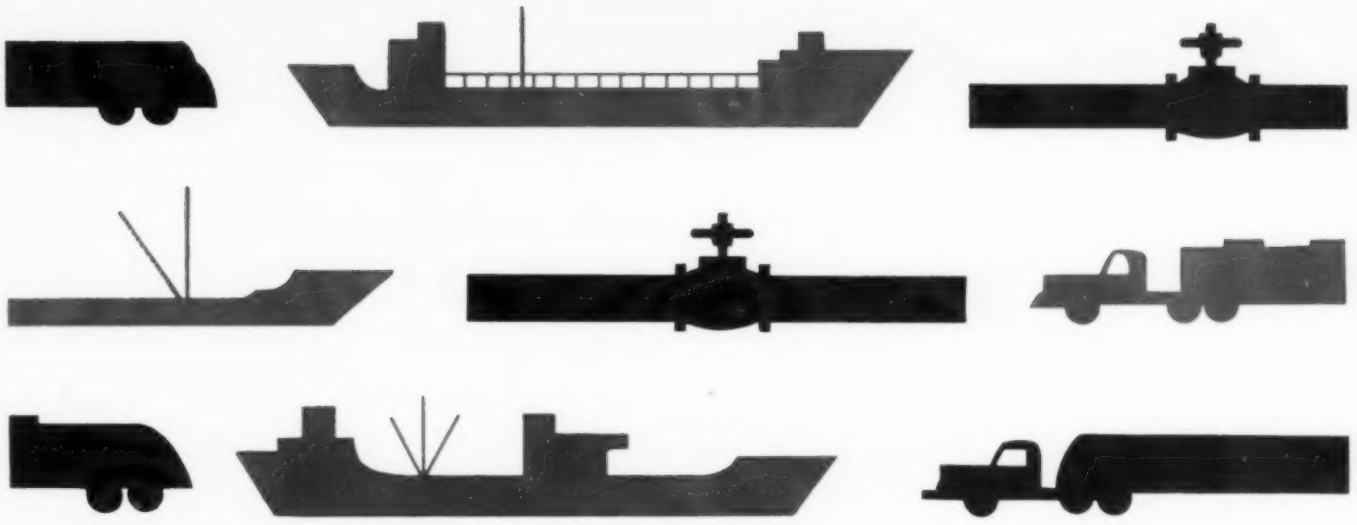

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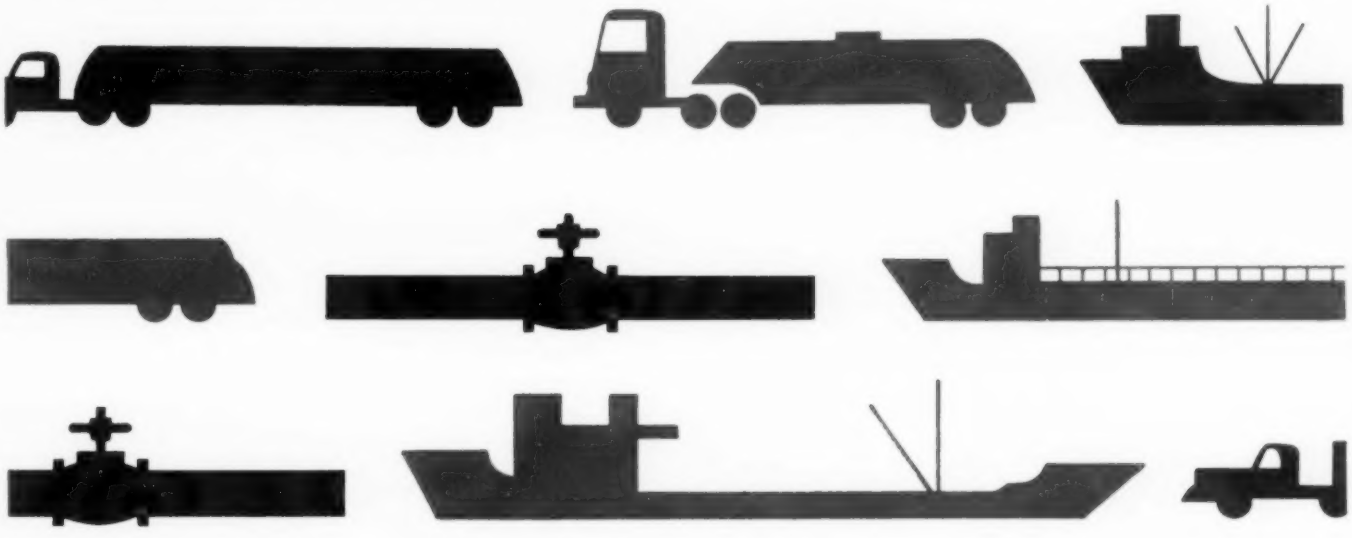

For over 35 years, Shand and Jurs has pioneered in the design and manufacture of mechanical tank fittings for truck tanks, marine tankers and pipeline installations. S&J offers petroleum transporters the world's most complete line of valves, gages, fittings and controls for maximum safety and economy in the movement of petroleum products. Convenient Shand and Jurs branch offices and sales representatives are ready now to help you with your tank fitting problems. Call them today.

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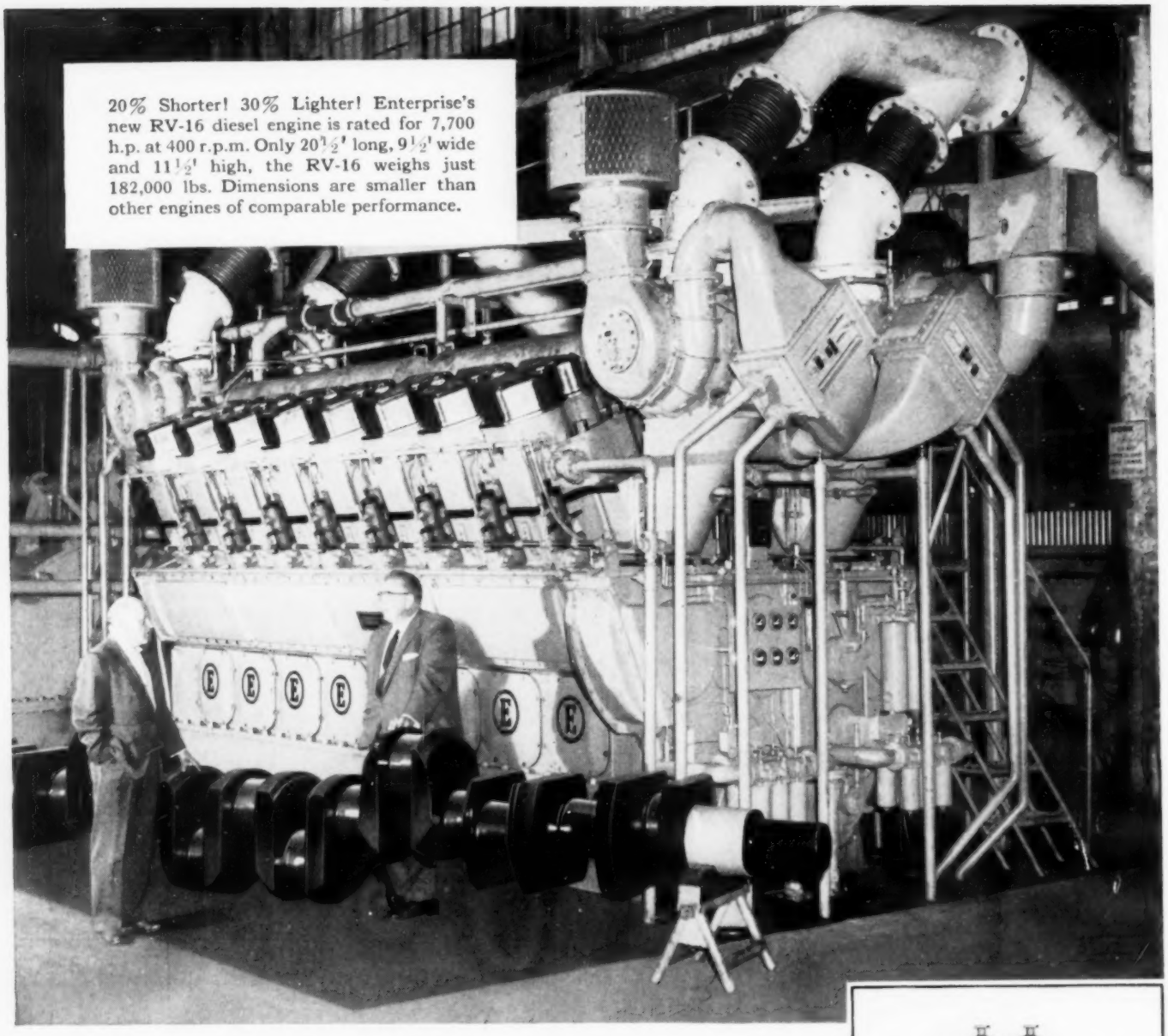
For more data on advertised products, use Readers' Service Cards, last page.



20% Shorter! 30% Lighter! Enterprise's new RV-16 diesel engine is rated for 7,700 h.p. at 400 r.p.m. Only 20½' long, 9½' wide and 11½' high, the RV-16 weighs just 182,000 lbs. Dimensions are smaller than other engines of comparable performance.

Enterprise Chooses KOPPERS Piston Rings Exclusively for RV-16

Prototype of a new line of industrial diesel engines, the RV-16, built by Enterprise Engine & Machinery Co., of San Francisco, is designed for such rugged operations as delivering main propulsion in towboats and seagoing freighters, or supplying power for pumping stations or electric generation.

As many other leading manufacturers have done, Enterprise has selected Koppers Piston Rings exclusively. Koppers wide range of types and sizes . . . variety of material selection . . . control of material quality . . . close tolerance performance . . . rigid standards of inspection—all contribute to Koppers leadership in the field of industrial piston and sealing rings, making Koppers the most dependable source of supply.

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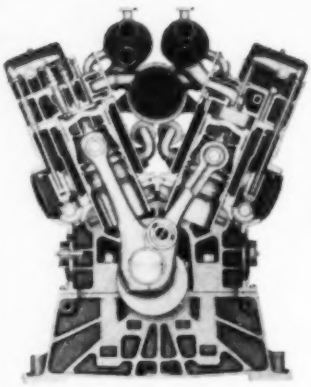


Cutaway shows internal design of the RV-16

KOPPERS

AMERICAN HAMMERED

Industrial Piston Rings

Engineered Products Sold with **Service**

PIPE LINE PANORAMA

FPC Backs Pipe Lines . . . Acting on recent Federal Power Commission appeal, Supreme Court is expected to give decision soon on Federal Court of Appeals (Washington, D.C.) ruling that pipe lines can't apply for increase in rates without customer approval.

Spokesmen say if favorable decision isn't reached, natural gas pipe lines will face grim financial difficulties. It would be difficult, if not impossible, to meet consent requirement. Unless pipe lines have some means of obtaining badly needed price increases, they will be unable to obtain financing necessary for expansion and improvement of services.

If lower court ruling is upheld, pipe line companies stand to lose about $300 million in pipe line rate increases.

Big "If" for Texas-New Mexico Line . . . Nearly completed 750-mile Four Corners Pipe Line to California is being filled with $3.15 crude—a price that threatens to make things tough for 512-mile Texas-New Mexico line, to be completed next spring. Commitments for Tex-New Mexico line total only 9000 barrels to date. And there is serious doubt that, unless price is lowered, Gulf Coast and Mid-Continent buyers can meet the new rate.

Only previous posting for Four Corners crude was El Paso Natural's $2.90. However, they later met the $3.15 price.

New Gravitometer for Pipe Lines . . . Sinclair announces development of improved gravitometer that can be used in many phases of pipe line operation. Researchers say instrument is accurate within 0.1° A.P.I. and has response time of about 35 seconds.

Sinclair says device was developed for two reasons: (1). Gravitometers now in use are too sluggish and hard to keep in proper calibration for satisfactory recording of gravity. (2). Automatic blending of two different crudes to constant outgoing gravity was desired, requiring a fast response, sensitive, accurate instrument.

Pipe Lines Carry More Crude and Products . . . Committee for Oil Pipe Lines reports that U.S. lines accounted for 43 percent of 1,016,814 tons of crude and products transported in '56. Water carriers accounted for 30 percent, trucks 23 percent and railroads 4 percent.

In '55, pipe lines accounted for 42.94 percent of the total, water carriers 29.56 percent, trucks 23.17 percent and railroads 4.33 percent.

Look for More Petrochemical Lines . . . Petroleum Chemical's new 30-mile, 6⅝-inch ethylene pipe line from Lake Charles, La., to Orange, Texas, appears to have most of the "bugs" ironed out, i.e., line is relatively free of leakage, after construction and testing it was clean and dry enough to handle product in its gaseous state.

If line proves economical, look for still more petrochemical plants to switch from rail and water transportation to pipe lines for intermediate shipment of their products.

Canadian Gas Export Policy Cloudy . . . Western Canadian natural gas interests are greatly concerned over Prime Minister John Diefenbaker's refusal to hand down immediate decision on Canada's gas export policy. Major fear: That government's delay may stall Mid-western Gas Transmission's FPC application for permission to import natural gas from Trans-Canada Pipe Line.

Prediction is that, though delayed, exports will be allowed.

How U. S. Pipe Line Mileage Will Grow During 1958

	Miles Laid in 1957	Miles Forecast for 1958
GAS		
Transmission	7260	10,367
Gathering	2439	3,401
Total Gas Lines	9699	13,768
CRUDE OIL		
Trunk	2157	1,795
Gathering	1417	1,395
Total Crude Lines	3574	3,190
PRODUCTS	2035	1,344
ALL LINES		
Year's Total	15,308	18,302

Station Construction Outlook

	Horsepower Installed in 1957	Horsepower Forecast for 1958
COMPRESSOR	650,980	604,255
PUMPING (Both crude and Products)	142,697	110,405
Total Station Additions	793,677	714,660

PIPE LINE INDUSTRY Annual Survey Forecasts . . .

Record 26,072 Miles to Be Laid in 1958

Survey of 177 U. S. companies and 51 international pipe line operators shows a domestic increase of 19 percent and a 50 percent hike in foreign work over last year's construction activity.

By Melvin A. Judah, Editor, Pipe Line Industry

EARTH SATELLITES will not be the only things circling the globe in the coming year. If predictions of U. S. and international pipe line operators are fulfilled there will be enough new pipe lines laid in the Free World in 1958 to more than stretch around the world at the equator—a total of 26,072 miles is predicted.

U. S. pipe line construction should continue at a fast pace with 18,302 miles of oil, gas, and products lines scheduled in 1958 projects. Record year of pipe line activity is 1954 when 17,745 miles of line was laid in the U. S. Forecast figures are based on PIPE LINE INDUSTRY's survey of virtually all major pipe line companies in the U. S. and abroad. The survey included in addition to mileage predictions, sizes of lines and station additions.

Station construction will continue at a near record level in 1958. Horsepower installations of 793,677 in the U. S. during 1957 represent a 20 percent increase over 1956 station work; plans calling for 714,660 additional horsepower to be installed in 1958 will keep this activity near the record high. Foreign station construction in 1958 will amount to 90,562 horsepower as compared to 75,947 added in 1957.

Although there are still legal clouds on the horizon, gas transmission line growth should make up the major portion of scheduled work in 1958. Crude line construction will be down slightly from 1957 and products line construction may drop sharply from the 1957 high.

Construction in other Free World countries will be highlighted by large-scale projects planned in Canada, Venezuela, the Middle East, North Africa and Western Europe.

Outlook for U. S. Early clarification of court interpretations in rate-contracts decisions arising from the "Memphis Case" could break the log-jam on a record year of gas transmission line growth. Legislative action on

the Harris-O'Hara bill could also be a stimulating factor on gas line construction. According to the PIPE LINE INDUSTRY survey, 13,768 miles of gas lines are predicted for 1958; of this amount, 10,367 miles will be transmission lines and 3401 miles will be in gathering systems. Addition of 604,255 compressor horsepower proposed for 1958 compares with a record expansion of 650,980 horsepower last year.

Reports from crude pipe line operators show that there will be 3190 miles of new line laid in 1958 made up of 1795 miles of trunk lines and 1395 miles in gathering facilities. The U. S. report forecasts 1344 miles of refined products line to be laid in 1958. Pump station construction for U. S. crude and products lines is predicted to be 110,405 horsepower, as compared with 142,697 added in 1957 and 75,925 horsepower in 1956.

Free World Activity High. Projects reported by 51 companies operating pipe lines outside the U. S. indicate that a sharp increase in foreign pipe line construction will outstrip predicted U. S. growth. A total of 3520 miles of foreign gas lines is planned for 1958, as compared with 2126 miles completed in 1957.

Free World crude line mileage outside the U. S. calls for 3203 miles of new line; 2467 miles were laid in 1957. Products lines construction in foreign countries is forecast at 1047 miles; up from 675 miles built in 1957. Total compressor and pump station horsepower outside of the U. S. is scheduled to be 90,562; up nearly 20 percent over the 1957 total of 75,947 horsepower.

Major Companies Reported. This forecast of U. S. and Free World pipe line construction activity is based on PIPE LINE INDUSTRY's annual survey of company plans. A total of 177 companies, owning the bulk of the U. S. crude oil, gas, and products lines, is included in the complete forecast tally. Virtually every major company in the country responded. They told PIPE LINE INDUSTRY, in confidence, how many miles of lines they laid in 1957, sizes of pipe, station horsepower installed, type prime mover, and their plans for 1958.

Also included in the forecast is an estimate of the activity for a few companies which did not respond but had completed 1957 projects or had previously announced construction projects for 1958.

For the first time, PIPE LINE INDUSTRY's questionnaire obtained information on the size of pipe used in projects, and a designation of type prime mover to be used in station construction.

This survey does not include distribution lines laid within corporate city limits, conversion of lines from one service to another, or reconditioned pipe line mileage. Forecasts are based upon the mileage of new lines actually laid during 1957 and scheduled for 1958, not the mileage that will be placed in operation. Portions of lines already completed but not yet in service are included in the 1957 report; those sections scheduled for completion next year are in the 1958 figures.

Sizes of Pipe in Construction Projects

Nominal Diameter (Inches)	U.S.		Outside U.S.	
	1957	1958	1957	1958
4 and under	2506	2828	399	473
6	1832	904	252	618
8	1890	1395	353	360
10	969	599	621	471
12	1783	2302	148	1533
14	230	109	....	....
16	1172	1744	90	1115
18	414	582	100	....
20	1064	1310	1703	10
22	50	319	....	....
24	455	1959	257	1910
26	355	500	418	12
30	1654	2235	550	1201
34	670	723	377	53
36	264	768	....	....
Over 36	....	25	....	14
Total (All sizes)	15,308	18,302	5268	7770

Prime Movers in U. S. Station Construction

	Horsepower Installed in 1957	Horsepower Forecast for 1958
COMPRESSOR DRIVES		
Gas Engine	475,880	384,255
Gas Turbine	95,600	190,000
Electric Motor	69,500	30,000
Steam Turbine	10,000	
Total Compressor	650,980	604,255
PUMPING (Both Crude and Products)		
Electric Motor	123,660	93,450
Gas Engine, Diesel Gas Turbine	19,037	16,955
	19,037	16,955
Total Pumping	142,697	110,405
Total Horsepower additions All Stations	793,677	714,660

Free World Pipe Line Activity Outside U. S.

	Miles Laid in 1957	Miles Forecast for 1958
GAS (Transmission and Gathering)	2126	3520
CRUDE (Trunk and Gathering)	2467	3203
PRODUCTS	675	1047
Total	5268	7770

STATION CONSTRUCTION

STATION CONSTRUCTION	Horsepower Installed in 1957	Horsepower Forecast for 1958
	75,947	90,562

Pipe Line Contractors Return to Florida

THE NINTH ANNUAL MEETING of the Pipe Line Contractors Association will again be held at the Boca Raton Hotel and Club, Boca Raton, Fla. More than 850 leaders in pipe line construction will gather for the meeting January 18-22 to discuss progress in pipe line construction during 1957 and take a look at prospects for 1958.

Special recognition will be given during the meeting to honorary members of the organization. Also to receive special attention are the past presidents.

Highlights of this year's program cover tax problems and costs of financing pipe line expansion:

- Tom P. Walker, chairman of the board, Transcontinental Gas Pine Line Corporation, will discuss the effect of the money market on pipe line expansion.
- Henry Wallace, vice president, National Tube Division, U. S. Steel Corporation, will give an address on outlook for the steel industry.
- Clark W. Breeding, certified public accountant, will discuss tax probems of pipe line contractors.
- A roundtable discussion by Association members will consider labor problems.

PRESIDENT

JAMES P. NEILL, partner in Western Constructors, will preside over the convention as president-director. His experience in pipe line construction dates back to 1927. In 1950 he organized Western Constructors and in 1955 J. P. Neill & Company. Neill was instrumental in the organization of the Pipe Line Contractors Association in 1947 and has remained active in the organization. He has previously served as a director and as first-vice president.

HONORARY MEMBERS AND PAST PRESIDENTS HONORED

HONORARY MEMBERS

DEMPSEY

FOREMAN

HANRAHAN

HULL

LITTLE

Lifetime Honorary Members of the PLCA who will be honored are: Oscar E. Dempsey, C. S. Foreman, W. G. Hanrahan, Burt E. Hull, I. C. Little, Ray L. Smith, O. C. Whitaker, David R. Williams, Sr., and S. Miller Williams, Jr.

Past presidents who will receive special recognition are: T. R. Jones, 1948; T. A. Hester, 1949; Ray L. Smith, 1950; L. H. Favrot, 1951; Robert Thomas, 1953; G. A. Manuel, 1954; H. C. Price, 1955; C. C. Bledsoe, 1956; and James P. Neill, 1957.

SMITH

WHITAKER

D. R. WILLIAMS

S. M. WILLIAMS

SPEAKERS

CLARK W. BREEDING, partner in firm of Peat, Marwick, Mitchell & Co., Certified Accounts will address the convention on "Taxation of Oil & Gas Income."

CURTIS M. SMITH, president of SGA and vice president of Tennessee Gas Transmission Co. has had wide experience in public relations and advertising work.

TOM P. WALKER, Chairman of the Board, Transcontinental Gas Pipe Line Corp., has held executive positions with several gas and electric utility companies.

BREEDING

SMITH

WALKER

GREGORY

M. S .WILLIAMS

SHEEHAN

GUMP

OFFICERS

Present officers of the PLCA, in addition to President James P. Neill, are: R. P. Gregory, Houston Contracting Co., first vice president; M. S. Williams, Panama-Williams Co., second vice president; Robert D. Sheehan, Sheehan Pipeline Construction Co., treasurer; and Kenneth A. Gump, executive secretary.

BLEDSOE

CONYES

GRAY

MANUEL

DIRECTORS

Other directors now serving are: C. C. Bledsoe, Mid-Western Constructors, Tulsa; Robert A. Conyes, Conyes Construction Corporation, San Pablo, Calif.; Jack S. Gray, Grayco Constructors, Incorporated, Austin, Texas; G. A. Manuel, Williams-Austin Company, Pittsburgh, Penn.; E. G. Morrison, Western Pipeline Incorporated, Austin, Texas; Kenneth A. Owen, Parkhill Truck Company, Tulsa, Okla.; James W. Sharman, Sharman, Allen, Gay, & Taylor, Houston; and John H. Williams, Williams Brothers, Company, Tulsa.

MORRISON

OWEN

SHARMAN

WILLIAMS

Program

Pipe Line Contractors Association, Boca Raton Hotel and Club, Boca Raton, Florida

Saturday, January 18

6:00 p.m.—Pre-convention cocktail party for officers and directors

Sunday, January 19

All Day —Golf tournament begins. Courtesy Polyken Sales Division, The Kendall Company, Chicago

7:45 a.m.—Early Birds Breakfast, Patio Royale, Courtesy Insley Manufacturing Company, Indianapolis

10:00 a.m.—Special meeting, Auditorium, regular members only

2:00 p.m.—Meeting of Board of Directors, President's suite

5:30 p.m.—Cocktails, Cloister Loggia & Gardens, Courtesy Perrault Equipment Company, Tulsa

7:00 p.m.—Buffet Dinner and Dance, Cloister Lounge and Patio Royale, Courtesy H & L Tooth Company, Montebello, Calif.

Monday, January 20

9:30 a.m.—General business session, Auditorium (Open to all)

1. Call to order and welcoming address—James P. Neill, President
2. Report of the Executive Secretary—Richard A. Gump
3. Address by D. A. Golden, President, Northern Ontario Pipe Line Crown Corporation, Ottawa, Ontario
4. "The Money Market vs. Pipe Line Expansion," Tom P. Walker, Chairman of the Board, Transcontinental Gas Pipe Line Corporation, Houston
5. Address by Curtis M. Smith, President of Southern Gas Association, and Vice President, Tennessee Gas Transmission Company, Houston
6. Presentation of Safety awards.

12:00 noon—Luncheon and water show for all ladies attending the convention—Cabana Club Terrace and Pool, Courtesy Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

12:00 noon—Cocktails in Cloister Loggia and Luncheon in Patio Royale for all men—Courtesy M. J. Crose Manufacturing Company, Inc. of Tulsa, Houston, Denver, Newark and Edmonton

2:00 p.m.—Golf tournament continues

6:00 p.m.—Cocktails and steak roast, Cabana Club, Courtesy Caterpillar Tractor Company, Peoria, Ill.

Tuesday, January 21

9:30 a.m.—General business session, Auditorium (open to all)

1. James P. Neill, President, presiding
2. Address by Henry Wallace, Vice President, National Tube, Division, U. S. Steel Company, Pittsburgh, Penn.
3. "A Few Tax Problems Affecting Pipe Line Contractors," Clark W. Breeding, Partner in Charge Peat, Marwick, Mitchell & Co., Certified Public Accountants, Dallas

11:00 a.m.—Closed business session for regular members only, Auditorium

1. James P. Neill, Presiding
2. Reports of committees
3. Election of Officers and Directors

12:00 noon—Luncheon and Style Show by Burdine's in Patio Royale—Courtesy Crutcher-Rolfs-Cummings, Inc., Houston

3:00 p.m.—Awards for winners of golf tournament, Patio

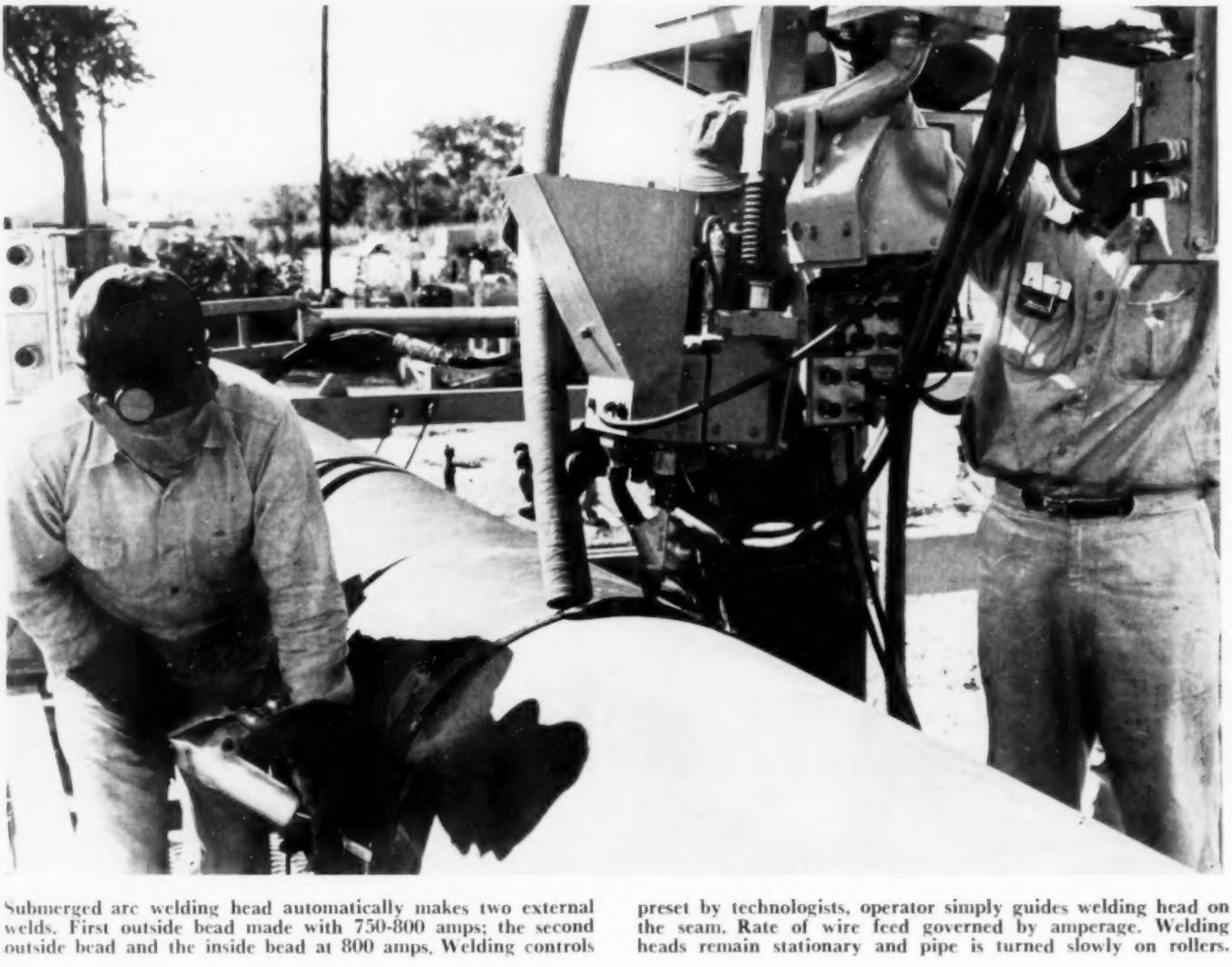
6:00 p.m.—Cocktails in Cloister Loggia, Courtesy International Harvester Company, Chicago

7:30 p.m.—Annual Banquet and Floor Show, Patio Royale

Wednesday, January 22

8:00 a.m.—Breakfast meeting of Board of Directors, Polo Room

10:00 a.m.—Meeting of regular members only, for discussion of labor matters, Auditorium



Submerged arc welding head automatically makes two external welds. First outside bead made with 750-800 amps; the second outside bead and the inside bead at 800 amps. Welding controls preset by technologists, operator simply guides welding head on the seam. Rate of wire feed governed by amperage. Welding heads remain stationary and pipe is turned slowly on rollers.

Contractors and Operators Benefit From 1957 Advances

Improved construction and operating techniques plus new ideas in equipment make pipelining more efficient.

NEW IDEAS in equipment, as well as construction and operating techniques, will mean more efficient operation for pipe line operating companies and contractors in 1958. Advancements of last year helped contractors solve the problem of laying large diameter pipe in rugged terrain and under severe weather conditions.

Advances in submarine pipelining were among the outstanding developments of 1957. Two new barges for laying large diameter pipe were commissioned. Both contained many new features to make offshore pipe line construction easier. Design of offshore lines based on preliminary bottom surveys should make for stable lines even during hurricanes or tropical storms. A new idea for cathodic protection of marine lines could well eliminate lots of maintenance headaches for submarine pipeliners.

Automation was big news in every phase of pipe line operations. Automatic welding at double jointing yards made possible winter construction activity in Canada. New control and measuring equipment was introduced for custody transfer and at virtually all types of pipe line stations. A continuing trend to automation is highlighted by installation of more and more unattended stations. Use of computers in solving engineering and design problems was more widespread as was their continued use in dispatching and accounting problems.

Prime movers came in for some headlines, too. Tapline placed in service the first gas turbines for crude oil pipe line operation. Texas Eastern's use of 15,000-hp electric motors for compressor drives was another first in the pipe line industry.

By Melvin A. Judah, Editor, and
John C. Watts, Engineering Editor

Automatic Yard Welder

Fully automatic welding of pipe in the field has been considered the goal of pipe line construction men for many years. Early in 1957, H. C. Price Company put into operation a double-jointing yard which features the first successful application of this principle. Its initial trial was purposely attempted in the winter months to evaluate performance during the most severe weather. To handle double-jointing of a part of the new 34-inch pipe being laid for Trans-Canada Pipe Line Company, the automatic yard welder was installed at the double-jointing yard at Oak River, Manitoba. Atmospheric temperatures as low as —44°F. did not interfere with operations. Qualification tests were made with the temperature around —24° F.

A number of improvements have been made since the original yard was put into operation. The second unit was designed to increase production by about 30 percent. Among the revisions are better grinding equipment to produce more uniform pipe ends, completely automatic submerged-arc-welding heads, more efficient pipe handling equipment, and equipment for placing the pipe in compression during line-up and tack-welding. All pipe handling equipment and control facilities were designed for portability. Power equipment, including diesel-driven generator, welding generators, control boxes, and workshop are contained in a trailer.

In the automatic welding process, two sections of pipe are placed on the double-jointing rack. Rubber-surfaced rollers support the pipe. A hydraulic internal line-up clamp brings the ends of the pipe together. The pipe ends are butted together, eliminating the usual 1/16-inch spacing between joints.

During line-up the pipe is positioned so that the bottom of the pipe is under compression. A 2-inch single-bead tack weld is made on the bottom with the pipe in this position. The pipe is then rolled over putting the top of the pipe under compression at the weld position and the bottom under tension. A tack weld is then made on the bottom. The only manual welds are the two tack welds.

With the new machine the first outside weld is made at the rate of 90-100 inches per minute. The second external weld is made at 65-inches per minute with the internal welding speed being 55-inches per minute. Both the internal and external welding heads remain stationary and the pipe is slowly turned by the rollers on the double-jointing machine.

Operator on boom which is inserted into the pipe for the inside and final weld. Movement of boom is manipulated by heavy roller chain and a sprocket. Boom is operated by electric motor through gear reducer.

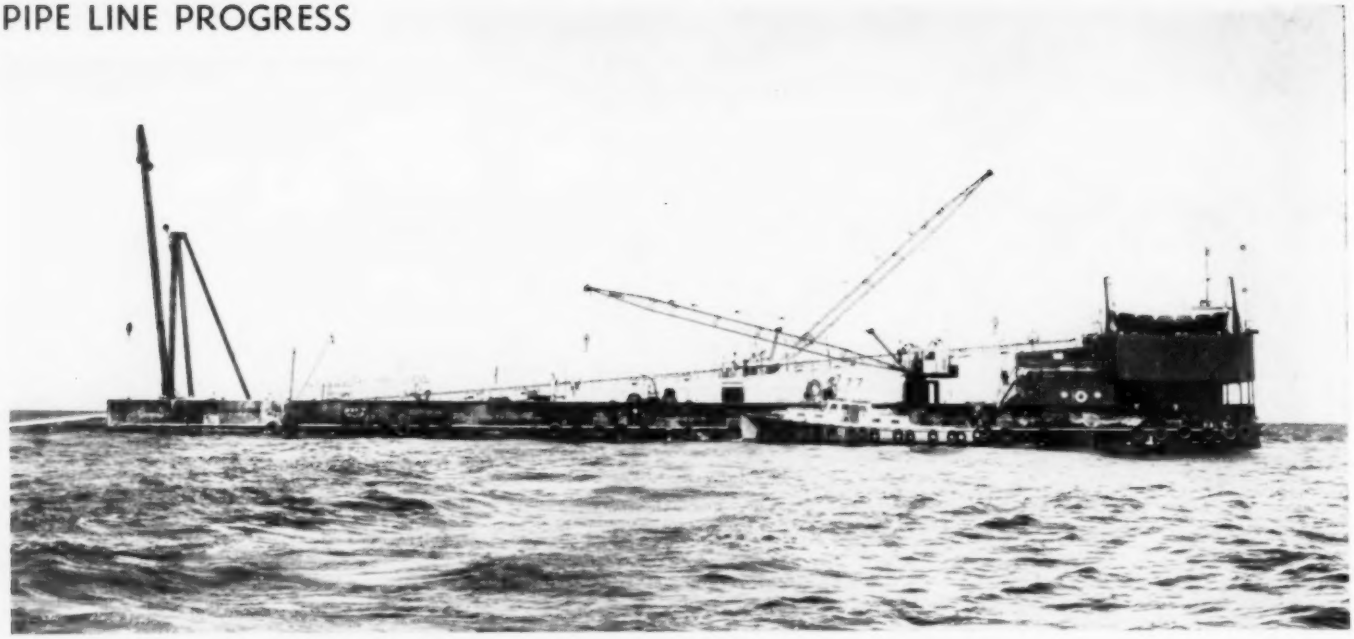
Quality of the welds was excellent even under the most severe weather conditions. Welds made by the automatic yard welder are far above the requirements of the API-AGA code. Quality is consistent through the weld. Welds have maximum ductility, superior tensile strength, and approach 100 percent quality when X-rayed.

Winter months have been considered impossible for pipe line work, but with the automatic double-jointing yard, work continued during cold weather. Further, the low cost of plant welding was realized. Where on the spread, 25 to 30 welders would be required; with the automatic unit 12 to 16 unskilled laborers with proper supervision can do the work. Average output of the plant used in Canada was 70 welds per day, with the new unit rated at 110 welds per day for 34-inch pipe.

Offshore Pipe Laying Advances

Increased oil and gas production in the Gulf of Mexico off the coast of Louisiana has caused greater activity in offshore pipelining. Two new pipe laying barges were placed in service during 1957. Both were designed to handle large diameter pipe and to work at much greater depths than had been attempted previously in open waters.

Marine Gathering Company's "Magic" was the first of the new barges. The "Magic" is a completely self contained barge; air-conditioned crew quarters; offices and equipment rooms are located below deck. Its distinguishing feature is an inclined centerline ramp for launching pipe. Two 35-ton cranes, located on each side of the center pipe ramp, allow loading from either side, depend-



Centerline ramp of Magic lowers pipe into the water with the proper overbend. Two 35-ton cranes on each side of the center ramp make it possible to load pipe from either side depending on weather and sea conditions. Air-conditioned crew quarters and office space is provided below deck.

"Stinger" cradles pipe as it leaves the M-211. Extending 356 feet from the barge, the controlled buoyancy of the "stinger" lowers the pipe to the Gulf bottom at the proper angle eliminating the necessity for buoys on the pipe.

ing on wind and sea conditions. One crane can bring additional joints aboard while the other is used for line-up.

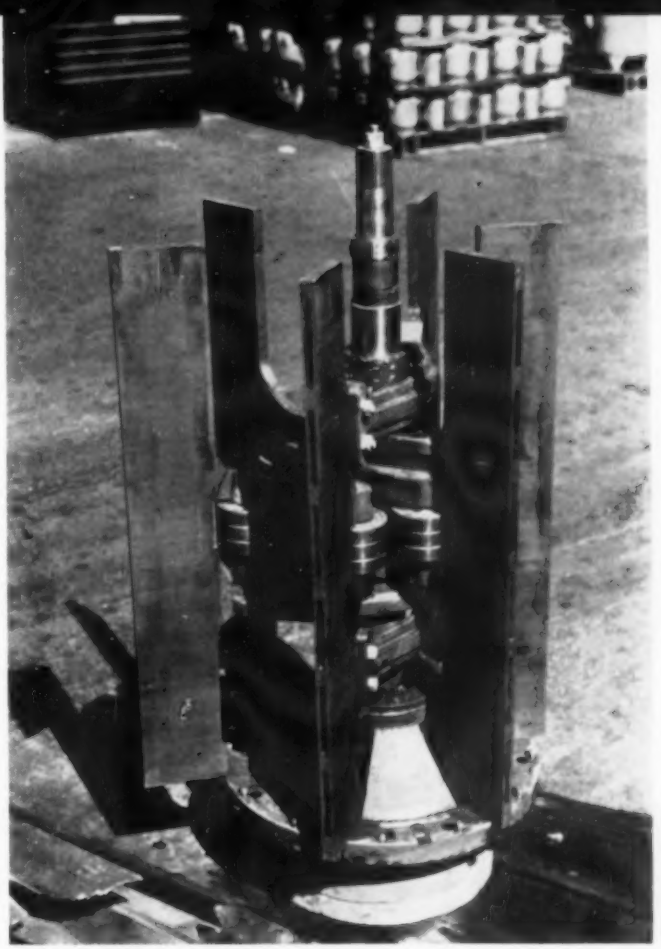
Another new barge, Brown & Root's heavy-duty M-211, weighs about 1250 tons, is 300 feet long, 60 feet wide, and 19 feet deep. Although additions are to be made to the M-211 later, its unique operating feature is the method of controlling the angle at which the pipe enters the water. A controlled buoyancy cradle 356 feet long is attached to the stern of the barge. It allows the concrete-coated pipe to be lowered to the floor of the Gulf at a gentle angle so as not to crack the coating, eliminating the time-consuming job of attaching buoys to the pipe and recovering them after the pipe reaches the bottom. (See PIPE LINE INDUSTRY, October, 1957, pages 30, 43.)

High Capacity Meter Passes Test

Esso Research and Engineering Company has announced completion of a successful, year long test of a 10,000-barrel-per-hour positive displacement meter. The meter, which was developed jointly by Esso, Interstate Oil Pipe Line Company and A. O. Smith Corporation, has been under test at Interstate's Anchorage terminal. During this year-long test, more than 60 million barrels of oil has been handled by the meter. The new meter is accurate to within one tenth of 1 percent.

Using the rotary vane principle, this meter is essentially an enlarged version of a 2800-bpm double-case meter which is in general use, however it has 6 blades instead of 4. A 36-inch steel outer case is equipped with 16-inch flanges; face-to-face dimension is 46 inches; over-all

Double-case rotary vane, 10,000 bph PD meter installed at Interstate Oil Pipe Line's Anchorage terminal. It weighs about 5800 pounds. Accuracies of 1/10 of 1 percent were obtained while handling 60 million barrels of oil.



(At right) blade assembly unit of high capacity meter. Inspection after 15 million barrels of crude oil was measured revealed that clearances were essentially the same as originally set.

height is 65 inches. The meter weighs approximately 5800 pounds.

An inspection made at 15 million barrels revealed that clearances were essentially the same as originally set. The meter was reassembled after inspection with the same parts and placed back on stream. Strainer protection for this meter is shop-made from steel plate with ¼-inch diameter holes. Experience does not afford a reliable estimate on throughput expectations, however, based on inspection to date, a long service life is anticipated. Experience is limited to one meter measuring two grades of crude oil.

There is considerable opinion in the pipe line industry that a meter in the 5000-bph range would be desirable. Rates in the 4000- to 10,000-bph range, quite common among pipe lines, are in-between rates as far as the present high capacity meters are concerned. A review of present and forecast marine terminal transfer rates has also created some interest in a meter larger than 10,000-bph class. For example, a 40,000-bph transfer rate seems to be a common goal among marine transportation interests. For these rates a meter in the 20,000-bph range installed in banks of three would provide a flexible system with standby provisions. (See PIPE LINE INDUSTRY, May, 1957, Page 46.)

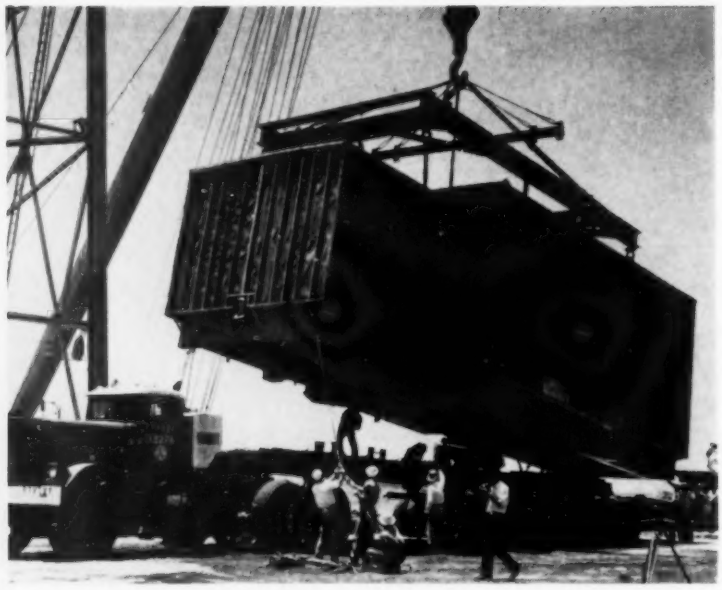
Gas Turbines Boost Capacity of Tapline

Nine combustion-gas turbines will increase Trans-Arabian Pipe Lines capacity from 340,000 to 435,000 barrels a day by early 1958. With this boost Tapline will have the largest capacity of any single long-distance pipe line in the world. Turbines rated at 5000 horsepower each will drive special 5200-rpm centrifugal pumps.

Combustion chambers of the turbines burn crude oil carried by the pipe lines. Each turbine will consume approximately 430 barrels of crude daily. Crude is treated with magnesium sulfate to inhibit the corrosive effects of the vanadium present in the oil.

Of the nine turbines, five are being installed as auxiliary pumping units at intermediate locations between the existing pump stations, which are approximately 160 miles

The heart of an auxiliary pumping unit, as installed at Wari'ah on the Aramco section of the Trans-Arabian pipe line system. At the left is the 125-ton turbine van, containing the turbine and the centrifugal pump; this van is 53 feet long, 15 feet wide and 19 feet high. At the right is the 80-ton control van, containing air filters and controls.



The 80-ton control van is transferred from barge to trailer at Ras Tanura for the long haul over the desert sands to the installation site on the Trans-Arabian pipe line system.

apart. A sixth is used as a spare for the auxiliary units. Two more turbines are being installed permanently at Tapline's existing pump station at Turaif. A spare auxiliary turbine is being used temporarily at Turaif until installation of the permanent units is completed in February. The ninth unit, the first to be built outside Saudi Arabia, is being installed at a new permanent pump station at Qarystain, Jordan.

Auxiliary pumping units are outstanding examples of automation, being unattended and remotely controlled by radio from the existing pump stations. Each consists of four portable vans, together with necessary foundations, manifolds and a radio tower. One van, containing the turbine and the centrifugal pump, weighs approximately 125 tons and is 53 feet long, 15 feet wide, and 19 feet high. A second van, containing air filters and controls, weighs about 80 tons and has approximately the same dimensions as the turbine unit.

Two additional vans, one containing radio equipment and standby power plant, the other, tools, parts, and emergency quarters for transient personnel, are lighter and smaller. The units were completely prefabricated and factory-tested in the U. S., shipped to Arabia, hauled overland to the jobsite, slid onto their foundations and connected to the pipe line system.

A simple-cycle, two-shaft turbine supplies 5000 horsepower to the pump shaft at 110° F. ambient air temperature and 2600 feet elevation. A fire wall separates the turbine from the pump. The turbine portion of the van is pressurized with filtered air and the pump compartment is held under slight negative pressure.

The auxiliary units are designed for closed suction operation. Suction pressure, discharge pressure, discharge pressure controller set point, and filtered air temperature to the turbine are transmitted to the controlling pump station by radio. It is possible to start and stop the units by radio as well as to vary the load by changing the discharge pressure controller setting.

The auxiliary pumping units are to be hauled to a special shop at Turaif whenever overhaul is required. The spare portable unit is provided to maintain the line capacity during the overhaul periods. Dual manifolds and foundations at each location permit the installation of the spare unit and the removal of the operating unit with a minimum loss of throughput.

Delayed Blasting

Breaking up a big blast into many small ones can prevent damage along the right of way when rock blasting is necessary. This new technique developed by H. C. Price Co. proved effective in reducing ground vibrations and scattering rock while constructing a loop along Texas Eastern's 1957 project. In addition, the time delay allows the dynamite to work more efficiently in breaking up the rock, thus providing a better ditch. When the backhoes start clearing out the shattered rock, their tracks rest on solid ground, and the side of the ditches are unusually clean-cut.

Primacord "tails" leading from the loaded dynamite holes are held while the blast location is back-filled. Delay connectors in trunkline fuse break blast into series of small charges reducing concussion shock and the danger of thrown rock.

The heart of the system is the use of primacord detonating fuse and MS (millesecond) delay connectors instead of the conventional cap and fuse. Blasters usually drill two parallel rows of holes. Depth of the holes and the distance between them depend on the nature of the rock and the desired depth of the ditch. The holes are loaded with dynamite and a length of primacord allowing a "tail" to extend out of the backfill. A trunkline of primacord is laid along the row of shot holes, and each tail is tied to it.

The trunk line is cut at intervals, usually providing groups of 6 or 8 holes in each series. Delay units are installed to connect the various sections of the trunk line. These units momentarily delay the blast between each series of connected holes. Although the delays are brief, 1/22,000 of a second, they cause the entire charge to go off in a rippling sequence of smaller charges rather than

a single, huge explosion. The delay is so slight that it is hardly apparent.

What the controlled shots lacked in spectacular display of flying debris, they gain in safety and effectiveness. Blasting was continued to the edge of a paved highway without damage to the pavement and continued under power lines with no effect on the poles or insulators. Along the entire length, a parallel pipe line in the same right of way and only twenty-five feet from the blasting, was not disturbed.

Portable Machine Applies Weight Coating

Concrete weight coating can now be applied at the job site. A new portable machine applies a 1½-inch thick coating consisting of a 1 to 3 mixture of quick setting cement and coarse sand. The mixture is applied by a special machine equipped with a 125 cfm air compressor, heavy hose and nozzle. This technique was successfully used to apply weight coating on a 720-foot, 12-inch crude oil line operated by Service Pipe Line Company. The installation is at the company's Wildhorse Creek Crossing near Pauls Valley, Okla.

After the external coating is applied, the pipe is wrapped with wire mesh reinforcing. The mesh should stand out from the pipe 1-inch for a 1½-inch coating. With reinforcing in place, the pipe is placed on an engine-driven roller. The concrete jacket is then applied, the nozzleman shooting the joint of pipe from one side while the pipe revolves on the rollers. About 15 minutes is required to apply the coating. The coating is allowed to cure for 48 hours before the pipe is laid. Weight coating is applied to the field joints by hand.

Some of the advantages claimed for the new technique: does not damage the protective coating; "on the job" application eliminates freight and handling of the pipe between yard and job site; more economical than other methods; portability of applicator makes it adaptable to small as well as large jobs; a uniform mixture is placed on the pipe due to metered water; the moisture absorption of the concrete mixture is approximately 5 percent. A compressive strength of 4000 pounds is obtained in seven days.

Concrete weight coating is applied from spray gun as pipe is rotated. Wire mesh is applied to joint over external coating. For 1½-inch concrete coating, reinforcing is held 1-inch off the pipe.

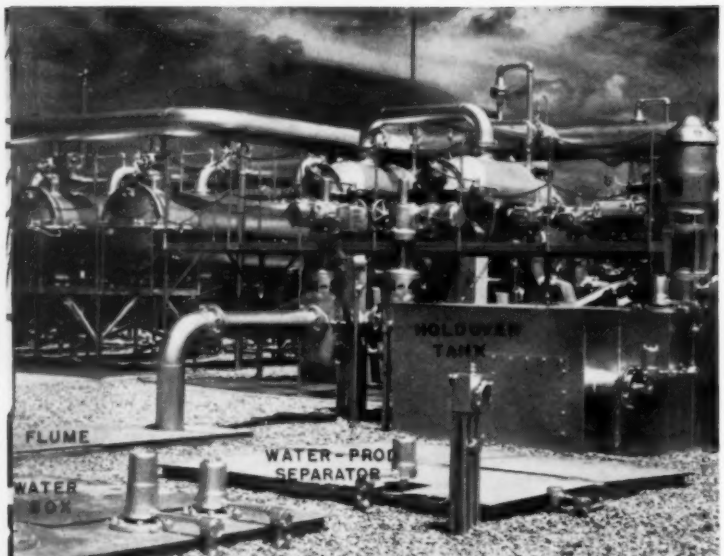
Automatic Filtering System Saves Manpower

Expansion of facilities has presented a number of pipe line companies with the choice of increased manpower requirements or installation of more remote controlled, automatic installations. One such installation is Plantation Pipe Line Company's automatic filtering equipment at Baton Rouge, La.

When another 18-inch line was added to the system, it was necessary to expand the pumping facilities at Baton Rouge. To make room for new pumping and metering equipment, the filtering equipment was moved to the tank farm. This semi-remote location dictated the choice of a system which required a minimum of attention and labor.

Plantation's filter systems were designed to remove 1000 to 1500 pounds of sediment and scale per month and varying quantities of free water. From the tank farm manifold the stream passes through jet cleaning strainers, rated at 1250 bph each, which remove sediment; it then passes through water separators, rated at 1400 bph each.

Over-all view of filter system at Plantation Pipe Line Company's Baton Rouge pump station. The 12-inch system is on the right, the 18-inch-B gasoline system is in the center and 18-inch-A fuel system is on the left.



The 18-inch-B system, jet cleaning strainers are on the right with water separators on the left. Cleaning cycle is automatic, being started either by pressure differential, or by the operator.

Automatic water dumps remove water before the stream goes to the meters.

Jet cleaning strainers are installed in pairs with motorized valves. The control system provides for selected or automatic isolation; draining and cleaning of successive pairs of strainers when the differential pressure across the bank reaches a preset quantity. From the time a pair of strainers is shut down until they are back on the line during the cleaning cycle requires approximately five minutes. High-pressure water passing through rotating jet arms cleans the strainers.

Water trapped in the separators is dumped to a gravity water-product separator. The holdover tank receives product when strainers are drained for cleaning and the product is immediately pumped back into the line. Water from the jet-cleaning operation is collected by the flume. The water-product separator receives water and product mixtures as well as water from automatic dumps. Product from this separator goes to a sump tank and water to the water box.

A differential-pressure cell starts the cleaning cycle when the pressure drop across the strainer banks reaches a predetermined value, or if necessary the operator pushes the proper button. After the cycle is started the various operations occur in automatic sequence.

Clamp-On Anodes Extend Submarine Line Life

Tennessee Gas Transmission Company solved the problem of providing cathodic protection to 26 miles of submarine line with zinc anodes which were clamped onto the pipe. To obtain the projected life of 40 years, calculations indicated 21,000 pounds of zinc would be required. To meet the physical requirements for the installation, 420-450 pound anodes were used.

Each anode installation consists of 20 anodes bolted around the circumference of the pipe. In designing the installation, allowance was made for 1 percent holidays in the coating. Although this is a very high allowance, it was preferred to over-design.

A conventional hot enamel coating with concrete weight coating was applied. Several thicknesses of plastic tape were wrapped over the felt outer wrap and under the anode bracket to isolate the anodes electrically. Further insulation of the anode ring was obtained by wrapping the underside of the anodes with tape. Insulating material was poured between the individual anodes making the only connection between the anodes through the anode core to the steel band. Special care was taken to prevent any electrical contact between the steel reinforcing in the concrete and the zinc anodes. After completion of the coating, the resistance was checked to be sure there was no short between the two.

The installation was designed to provide a maximum cathodic voltage under —1.1 volts measured to a copper sulfate electrode. Measurements made after installation show a voltage of —1.04 volts at the end of the line. This value is fairly constant throughout the entire length. TGT engineers say that the installation is performing as planned. (See PIPE LINE INDUSTRY, September, 1957, Page 28.)

Zinc sacrificial anodes were clamped to pipe with 20-25-pound anodes per ring. After concrete coating was applied, resistanct between anodes and steel reinforcing was checked to be sure there was no short. Protection is being obtained for 21 miles of 26-inch submarine pipe line.

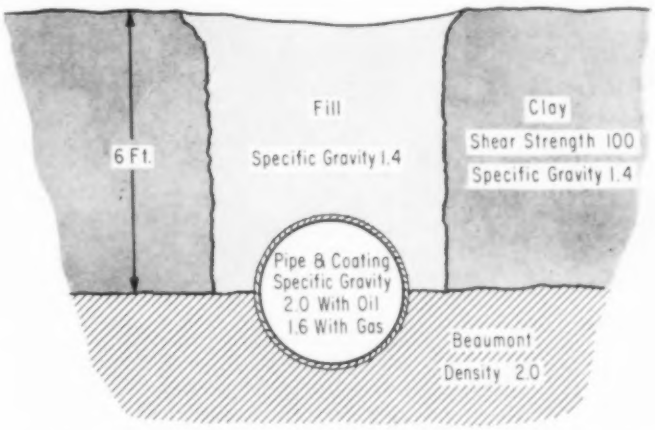
Bottom Survey Aids Design of Offshore Line

Studying bottom sediments, waves, currents, and tides gave TGT engineers valuable data for properly designing their new line from Grand Chenier, La., to CATC platforms 25 miles offshore. A piston coring device obtained undisturbed samples of bottom sediments to depths of 8 to 12 feet. A field lithology and density analysis were made of each core.

Costs of burying the line and effectiveness of the method of protection are highly dependent on the nature of bottom sediments. Sand, shell reefs and hard clays all present their special problems. In addition, soft spots can cause the pipe to over stress due to lack of support.

A hurricane may affect a pipe line after it is laid in a number of ways. Major effect of the hurricane waves on the Gulf bottom and on a pipe line at or under the bottom is through the water velocities produced by the waves. Unfortunately these velocities are not reduced in the same proportion as the waves. Since it was well known by the time this pipe line was designed that significant bottom velocities could be caused by waves to damage the pipe, it was decided that the line would be buried.

As a result of the survey it was possible to provide definite recommendations for the design of the line. Soil characteristics and distribution of the bottom sediments, along with the diameter, weight and strength of pipe, plus coating selection all contribute to the vertical stability of the pipe line. (See PIPE LINE INDUSTRY, October, 1957, Page 37.)

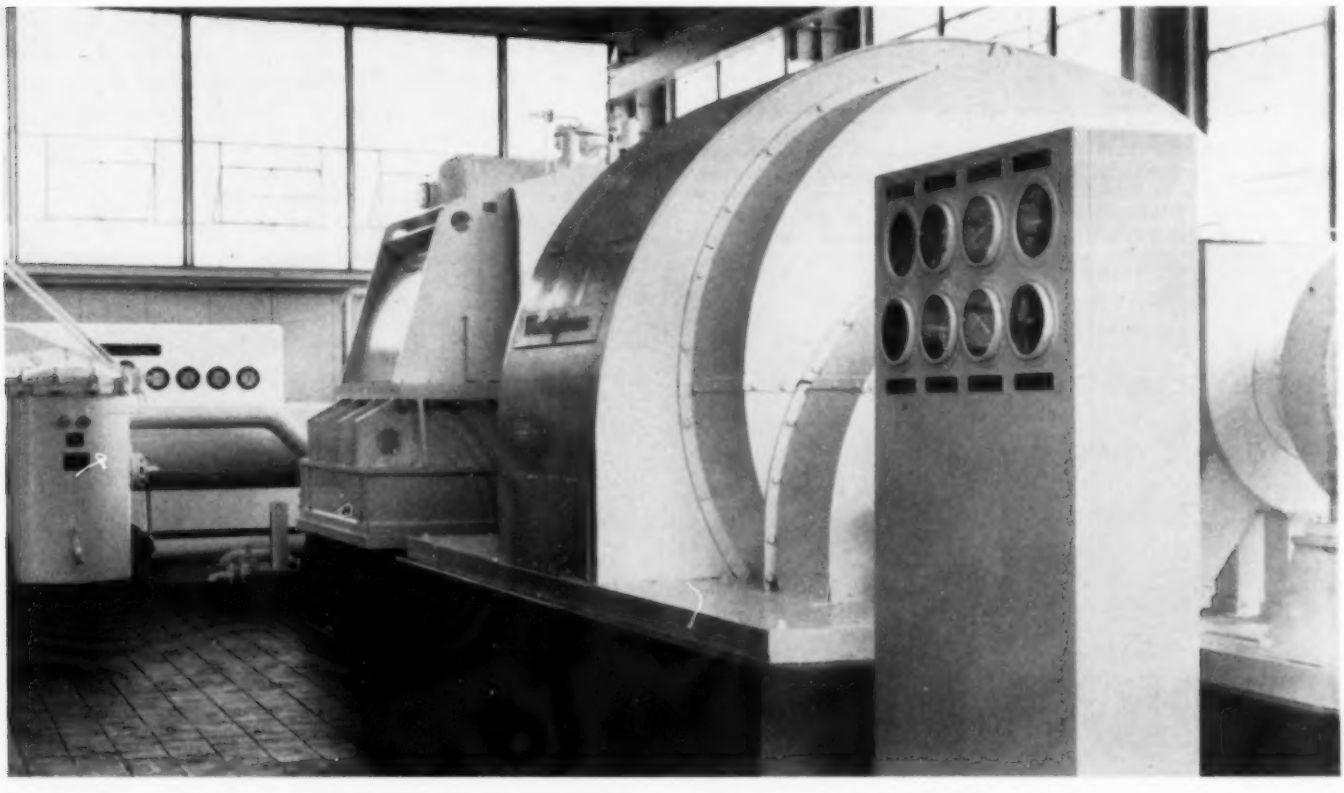


Artist's sketch of the ideal bottom features for a supporting bed for an offshore pipe line in the Gulf of Mexico.

Giant Electric Motors Cut Construction Costs

Three of Texas Eastern Transmission Corporation's new stations use a single 15,000 horsepower synchronous electric motor driving a centrifugal compressor. Installations costs were only $114.04 per horsepower as compared with $212.50 for earlier multiple electric motor stations.

Texas Eastern's engineers designed several innovations into the giant single unit synchronous motor stations. In size they are unique in the gas transmission industry; the horsepower rating for a single prime mover is about



Single 15,000 horsepower, synchronous motor drives centrifugal compressor through a speed increaser at Texas Eastern's new stations. Design with the giant prime movers reduced construction costs and simplified controls.

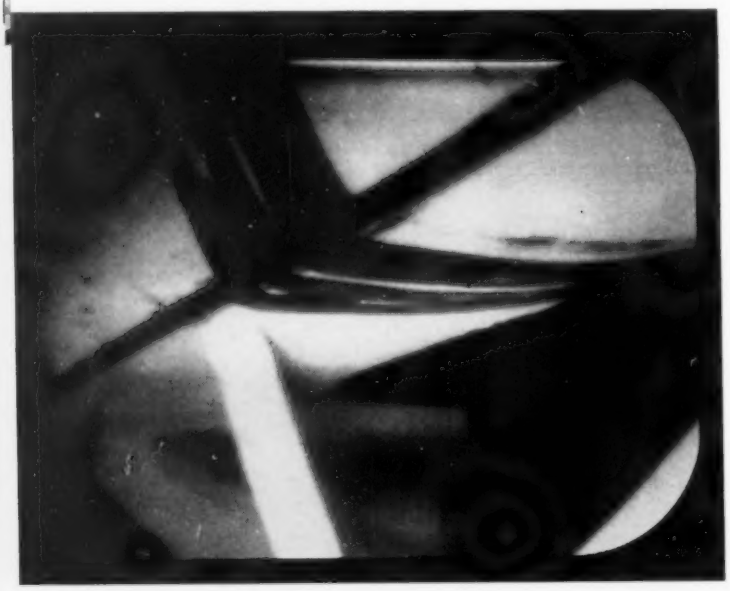
twice that installed at any compressor station before. Smaller electric motors have been used on gas transmission lines, but the 15,000 unit was a distinct departure from ordinary design.

The motor features "across-the-line" starting which reduced start-up problems and at the same time cut cost of switch gear by some $75,000. Motor efficiency is better than 98 percent; efficiency of the speed increaser is approximately 98 percent, giving a high power delivery to the compressor. Motor speed is 900 revolutions per minute, on a three-phase, 60 cycle power supply. It operates with 100 percent power factor on 4160 volts and 1580 amperes at full load. The motor exciter is a 30 kilowatt, 125 volt direct connected unit.

Market availability of the large capacity storage area at the Oakford storage in Pennsylvania backs up the single unit stations. Even though the single unit stations might be out of service for a short period of time, the northern section of Texas Eastern's Big Inch line plus the Oakford storage and line pack could handle demands for a short period. A standby unit is ruled out by the large cost of the 15,000-hp motors. (See PIPE LINE INDUSTRY, July, 1957, page 40.)

Underwater Television Aids Record Pull

Two giant anchors, set in 660 feet of water nine miles out, provided an estimated million pounds of holding force for the "Friction Transposition" method of offshore pipe laying used for an outfall line off Los Angeles. This method shifts the dead load of an anchor to working energy. It involved the laying of a double pull cable by Collins Construction Company, starting with a two-inch cable at the seaward end and tapering to smaller sizes toward shore. The cable stretched along the ocean floor between the heavy anchor nine miles out and the launchway.



An underwater television camera gave officials of the project an accurate and surprisingly detailed picture of the nose of the pipe and pulling sled in 300 feet of water. In this photo, a portion of one of the 20,000-pound pontoons supporting the sled, the steel banding around the pontoon, and the pontoon saddle can be seen very clearly.

The pulling barge, a converted LSM, positioned itself over the right-of-way during the pulling operations. A bridle of two-inch cable, passed through the sheave on the pipe line pulling sled, was brought in through a bow opening and two ends taken up on both drums of a double-drum pulling winch stationed amidships. During a pull, the full load is transferred directly to the pull cables through roller bearing carpenter stops, attached through a block assembly and weight indicator to the frame of the winch. Thus anchored, the pulling barge winch pulls the pipe line toward it.

An unusual innovation was the underwater television camera, believed to be the first ever used for submarine pipe line construction. The camera, attached to the pulling sled, gave officials of the project an accurate and surprisingly detailed picture of the nose of the pipe and pulling sled in 300 feet of water. A detailed picture of every foot of the pull assured quick detection of any possible trouble. (See PIPE LINE INDUSTRY, August, 1957, Page 37.)

Cool Microwave Stations Reduce Down-Time

Transcontinental Gas Pipe Line Corporation communications engineers decided to do something about costly maintenance and operating trouble caused by dust and high ambients inside 58 microwave stations. Air conditioning units were installed in 40 of the hottest, dustiest stations.

No specially designed equipment was needed to cool the stations; conventional one-ton window units were installed in a port on the north side of the shack. Air is taken from inside the shack, cooled to about 77 degrees and recirculated. In this manner dust admission to the shacks is minimized. Air conditioning units are controlled by both inside and outside thermostats. During seasons when outdoor temperatures are below 70 degrees, units are cut off and fan blowers bring in outside air to cool microwave equipment and maintain the inside temperatures below 77 degrees.

Both dust and excessive heat, two of the worst enemies of microwave equipment, are held in check by Transco's air conditioner installations. Less dust in the shacks improves relay performance. Cooling fans used previously took in dust laden air from cultivated fields surrounding the stations. Better heat control improves transmitter stability and lengthens tube life. Units now stay in tune better between maintenance calls and there have been less emergency troubleshooting trips. (See PIPE LINE INDUSTRY, April, 1957, Page 36.) **—The End**

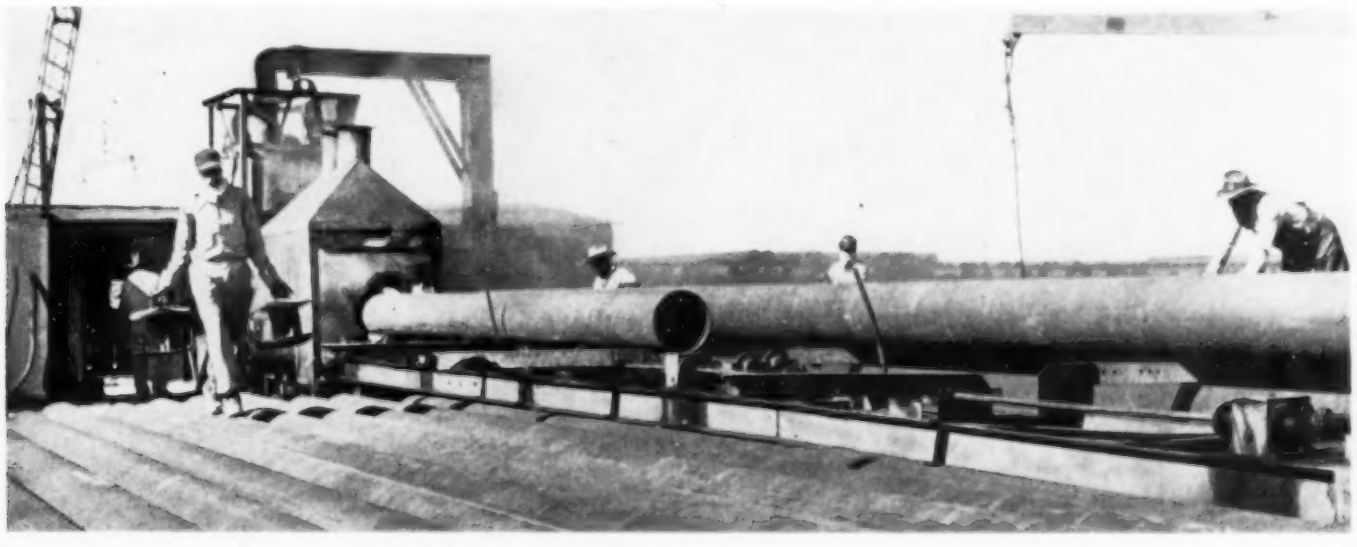
Thin Film Coating Applied On the Job

Plant applies coal tar-epoxy to 50 miles of Transco's gas gathering line. Pipe will receive no special handling during construction.

Coal tar-epoxy is being applied to 50 miles of a gas gathering system. Average coating thickness is 9 to 10 mils. Coating is applied in one pass with no outer wrap. Pipe is handled as bare pipe.

By John C. Watts
Engineering Editor, PIPE LINE INDUSTRY

A RECENT successful field application of a thin film coating to approximately 50 miles of 3-inch through 16-inch line in a gas gathering system should heighten the already keen interest in the use of these materials for exterior protection of pipe lines. On the results of tests conducted over a three-year period, Transcontinental Gas Pipe Line Company elected to use a coal tar-epoxy external coating for its new gas gathering system near



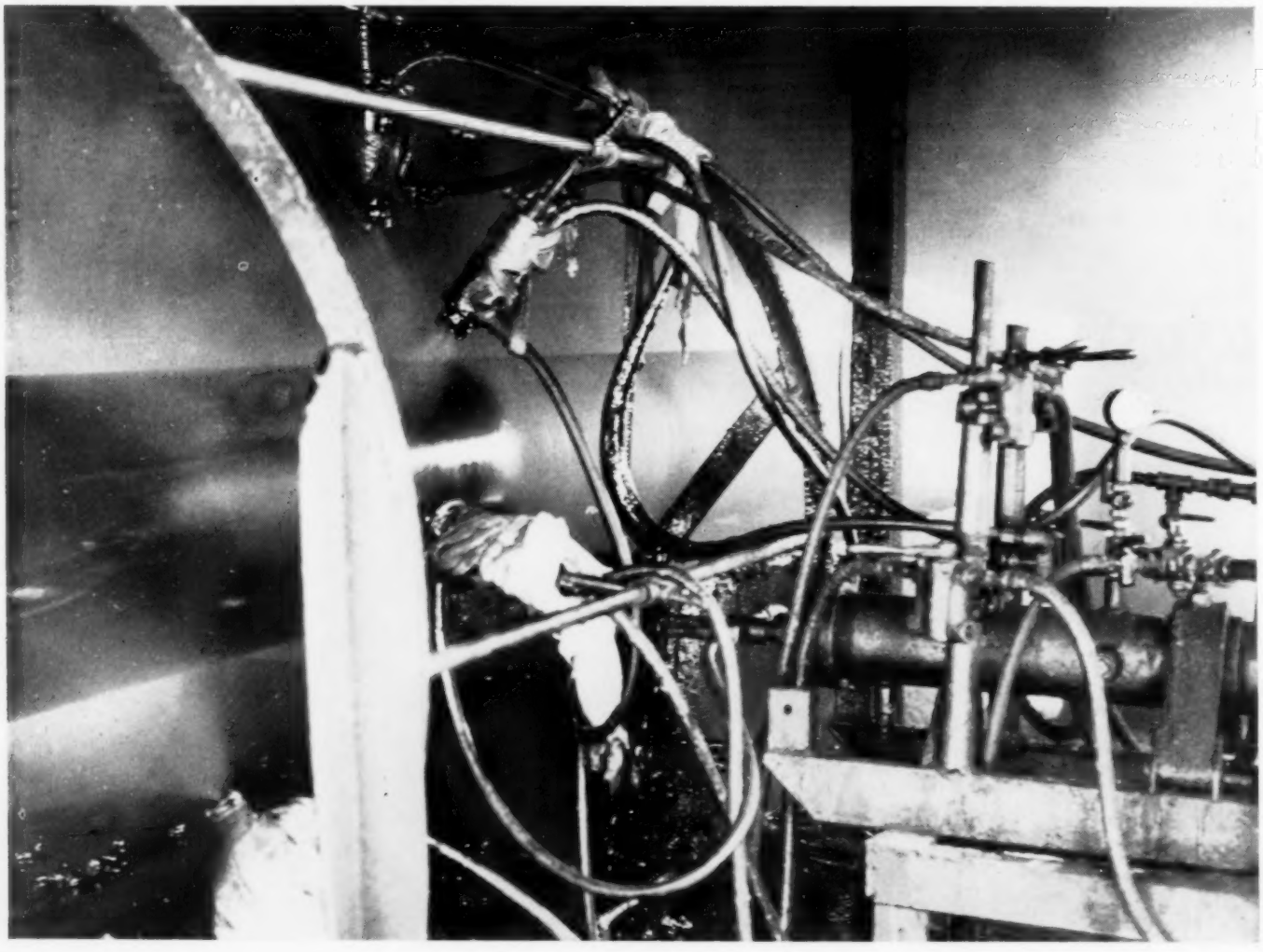
Joint of 16-inch pipe enters oven where it is preheated before entering coating plant. After leaving the oven pipe passes through blasting cabinet where it is cleaned with a mixture of grit and shot.

Close-up of oven and blasting cabinet. Pipe is blasted to give a commercial blast surface. After leaving cabinet, pipe continues on conveyor into blasting shed.

Tilden, Texas. Coating is being applied in a joint venture by H. C. Price, and Coast Paint and Lacquer Company. H. B. Zachry Company has the contract for laying the lines.

Major advantage of the thin film coatings is resistance to mechanical damage during construction. Transco plans to handle the coated pipe as bare pipe, where with conventional enamel coatings, the coated pipe must be given special handling to prevent mechanical damage. The coating is applied in one coat with no protective outer wraps.

Pipe Preheated at 165° F. At Tilden, a combination of shot and grit blasting was used to obtain a #1 commercial blast surface. Pipe was rolled from the storage rack onto a rotating conveyor system. First step in the operation was the preheating of the pipe. Experience indicated the optimum temperature to be 165° F. at



Conveyor rotates pipe as it passes under spray nozzles. Coating thickness is controlled by speed at which conveyor moves and speed of rotation. Pattern from each spray gun can be adjusted. Specifications call for minimum thickness of 8 mils.

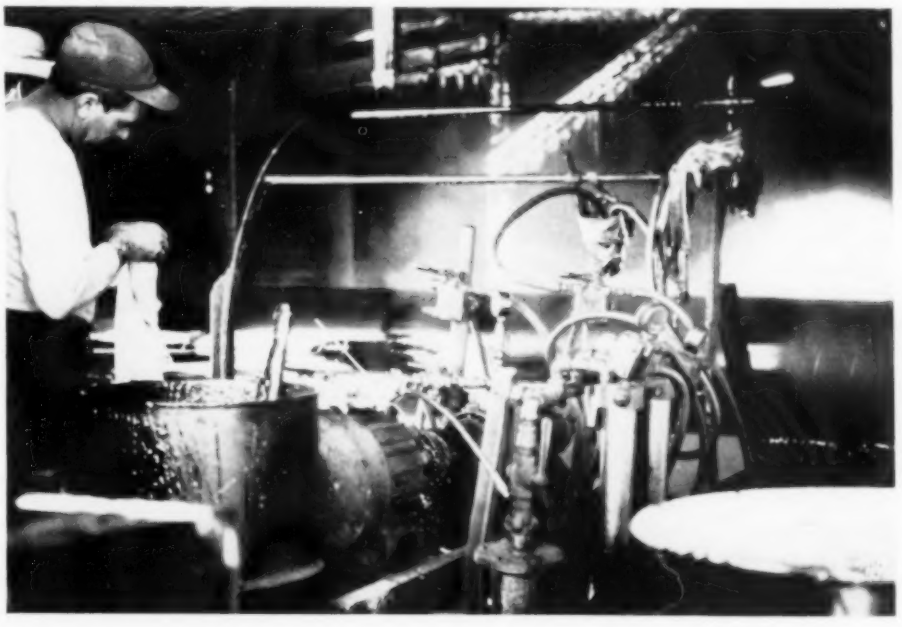
60-70° ambient. From the furnace, the pipe passed through the blaster. Removable plugs were placed in each end of the pipe to keep the blasting material out of the inside of the pipe. From the blasting machine, the pipe continued into the coating shed.

Coating Sprayed on Pipe. Application of the coating is made in an enclosed shed. As the pipe is rotated, it passes by four spray nozzles. The thickness of the coating is regulated by the fluid pressure on the spray guns. A minimum of 8 mils was specified, with the average thickness being between 10 to 11 mils.

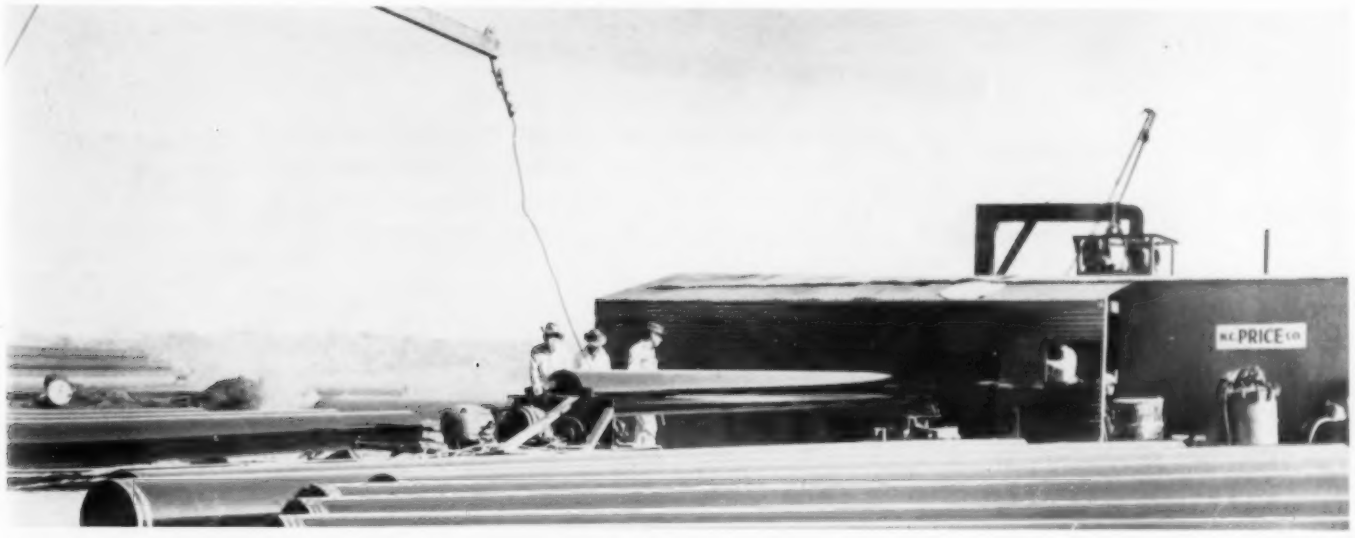
Before mixing, the coating was heated to 100-110° F. Since the coating machine was in a covered shed, and both the pipe and the coating material were preheated, weather conditions had little effect on operations. The only time work had to be stopped was during heavy rains. Even though low temperatures were experienced, work was not interrupted and there was no apparent damage to the coating.

Components Mixed 1:1. The coating material is chemically cured. It is mixed immediately prior to application. It is a two component material which is mixed in a ratio of 1:1. The material is received in 55-gallon drums. Air-driven pumps mounted in the shipping drum transfer the material to the mixing containers. Mixing is manual with five gallons of each being added to the hopper on the spray machine as the

Two components of coatings are pumped from the drums through a heater where the material is preheated to 100° F. before mixing. Five gallons of each component is mixed at a time.



Coating from the mixing hopper is pumped to the spray heads. Before mixing, the coating is heated to 100° F.



Pipe dries supported at each end for about 30 minutes. Coating is dry to the touch in 10 minutes and can be racked after 30 minutes.

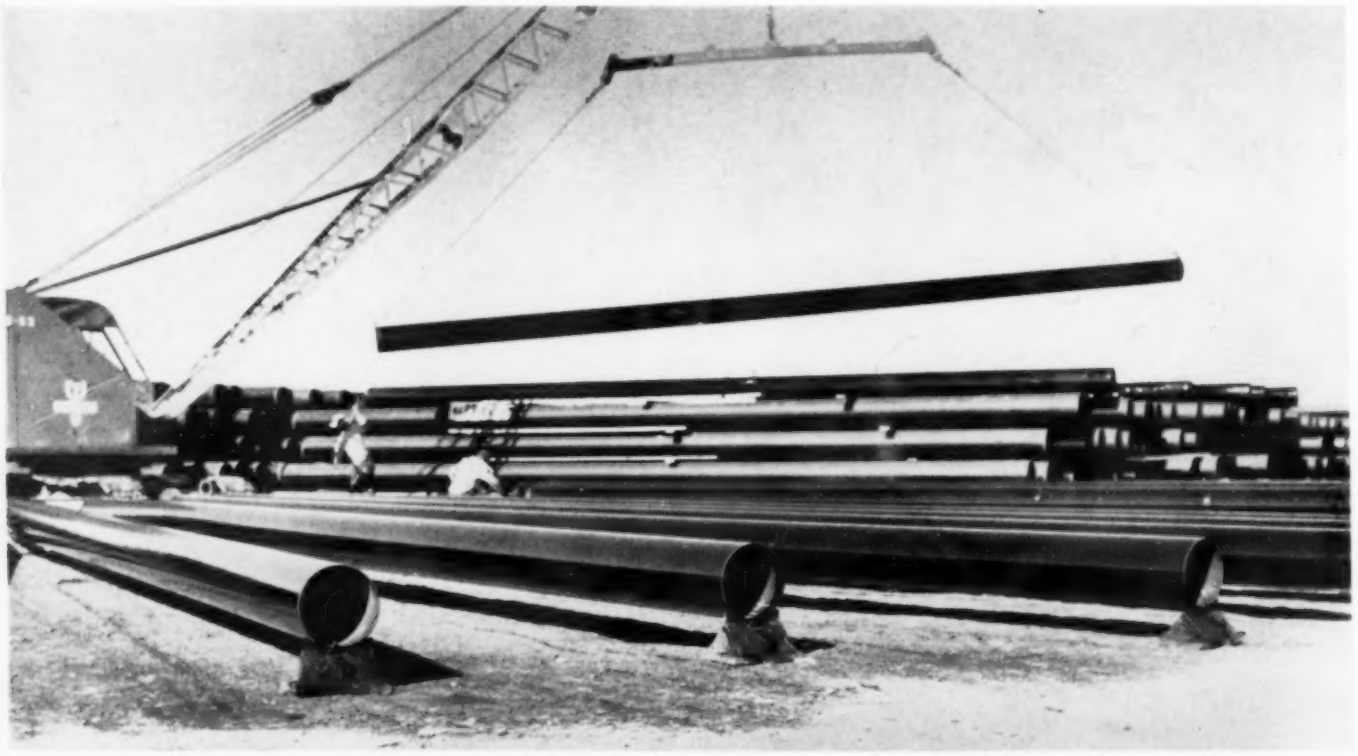
supply gets low. Lines from the drums pass through a heater where the individual components are preheated to 100° F. before mixing.

Coating Hardens Rapidly. As the pipe leaves the coating shed it is supported on a dolly. At the end of the track it is transferred to special end supports for drying. In 10 minutes the coating is dry to the touch and within half an hour has cured sufficiently to be racked.

Joints were "jeeped" after the coating was cured. The majority of imperfections found were caused by burrs on the pipe. These were ground off and the coating patched. Average run for the 16-inch pipe was 250 joints a day.

No Special Handling. No actual construction of the lines has started. The pipe will be handled as bare pipe during the stringing and construction of the lines. Tests have indicated that little mechanical damage of the coating can be expected. Field joints will be coated using a slower drying version of the coal tar-epoxy. Welding will damage the coating only about one half inch away from the weld, and indications are that the burned coating will have no effect on the quality of the weld.

Close-up of end supports used to support pipe during the drying. Coating has a very glossy appearance after drying. Tests indicate the coating will burn back at the weld about a half inch with no effect on quality of weld.



Pipe is racked by crane after coating is hard. Coated pipe requires no special handling. When construction starts, it will be handled as bare pipe.

Installing Drips Without Shutdown

Drip on Pacific Northwest Pipeline's 30-inch main line was installed without shutting down line. Using adaption of usual "hot-tap" procedures holes were cut in top and bottom of line. Special plug allowed removal of tapping valve from top of line.

Using double "hot-taps," Pacific Northwest installed drips on main line without interrupting flow. Procedure resulted in large savings during line modification.

By L. Harleston
Fish Northwest Constructors, Inc.
Salt Lake City, Utah

ADAPTION OF standard "hot-tap" procedures made it possible for Pacific Northwest Pipeline Company to install drips without a shutdown. Use of this method, which was developed jointly with Fish Northwest Constructors, Inc., resulted in substantial savings during revision of Pacific Northwest's 30-inch gas line near Aztec, N. M. With normal procedures, it would have been necessary to shut down the line, blow down the gas, and wait for sufficient venting before conditions would be safe for welding.

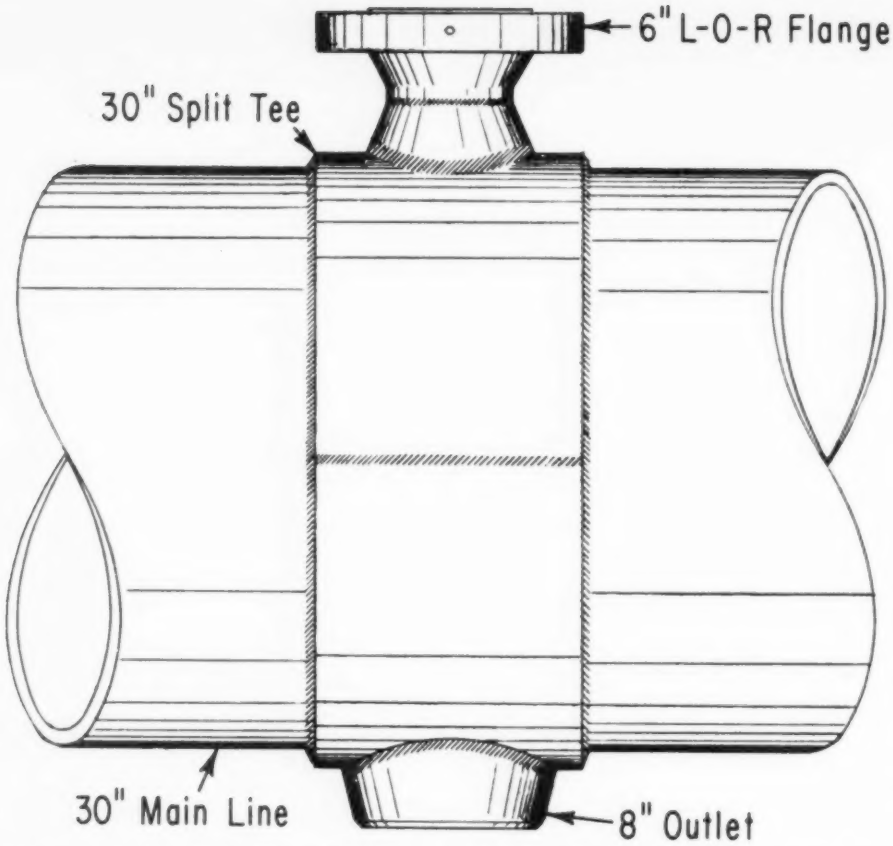
"Double Tap" Used. To prevent the high cost of shutdown, Fish Northwest Constructors devised the special solution to the problem of installing drips without interrupting main line flow. Essentially their idea was to follow usual "hot-tap" procedures to tap the top of the line; then with an opening in the top available, the cutter could be run through the pipe, and the bottom tapped from the inside.

Fittings Welded on Pipe. Before beginning the operation, proper fittings were welded to the bottom and top of the pipe. A 30-inch split tee with a 6-inch special flange for a valve and the tapping machine was fitted to the top; an 8-inch outlet was welded into position to receive the drip vessel. An 8-inch elbow and plug valve were installed on the bottom outlet.

Tapping Machine Installed. A six-inch full opening gate valve was mounted on the special flange on top of the pipe. With the valve in place, a hydraulic powered tapping machine was installed on the valve. Using this installation, with the line still under pressure, a 6-inch tap was made in the top of the pipe. The cutter containing the 6-inch coupon was retracted, the valve closed, and the tapping machine removed.

After the coupon was removed from the cutter, the tapping machine was again installed on the line. With the gate valve open, the cutter was lowered through the recently cut 6-inch opening, continuing through the 30-inch line until the bottom of the pipe was contacted. The tap was then made through the bottom pipe wall. After the cutter had been retracted into the tapping machine, the gate valve was closed and the tapping machine removed from the line.

Gate Valve Salvaged. To prevent the cost of leaving the gate valve on the tapped line, a plug was installed



First step in installing drip was welding a 30-inch split-tee on the pipe. Tee has a 6-inch opening on the top and an 8-inch opening on the bottom. A special flange is welded to the 6-inch opening and the gate valve is salvaged upon completion of the tap.

ANOTHER NEW HOT TAP DEVELOPMENT

Hot Tap Made Without Welding

TAPPING A LINE under pressure without welding is now possible using an adaption of a standard repair sleeve. A tap was recently made in this manner at the New York State Natural Gas Company's compressor station near Harrison Valley, Pa.

Purpose of this test was to see if the repair sleeve with a nipple and flange welded to it could be used as a tapping sleeve to perform a "hot tap" on a high-pressure gas line. The line to be tapped was a 12¾-inch steel pipe line carrying a pressure of 415 psi.

The test was completed, from bare pipe to connection of the branch line in just two hours. No difficulty was encountered in completing the tapping operation through the clamp-on neoprene seal fitting.

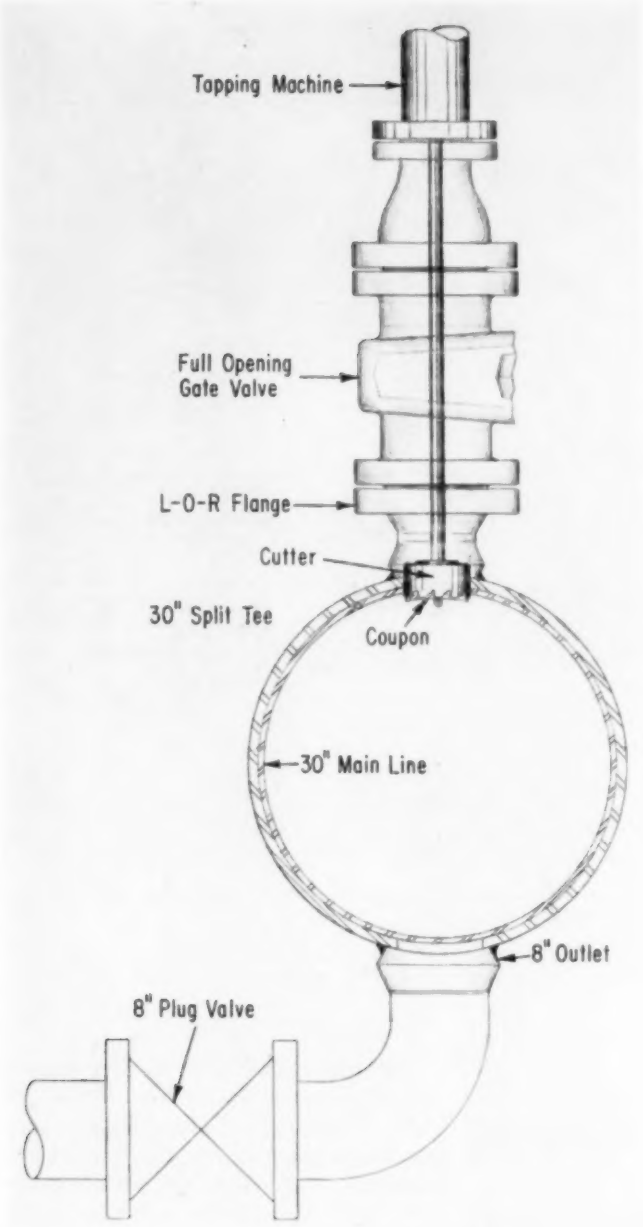
in the special flange welded to the six inch nipple. The flange was designed for installation of a plug to seal the tapped outlet. The inside circumference of the flange has a machined groove which contains four steel segments attached to and moved by bolts operated from outside the flange. Designed to be attached to the tapping machine in place of the cutter, the plug has a companion groove into which these segments are extended when the plug is in its proper position in the flange.

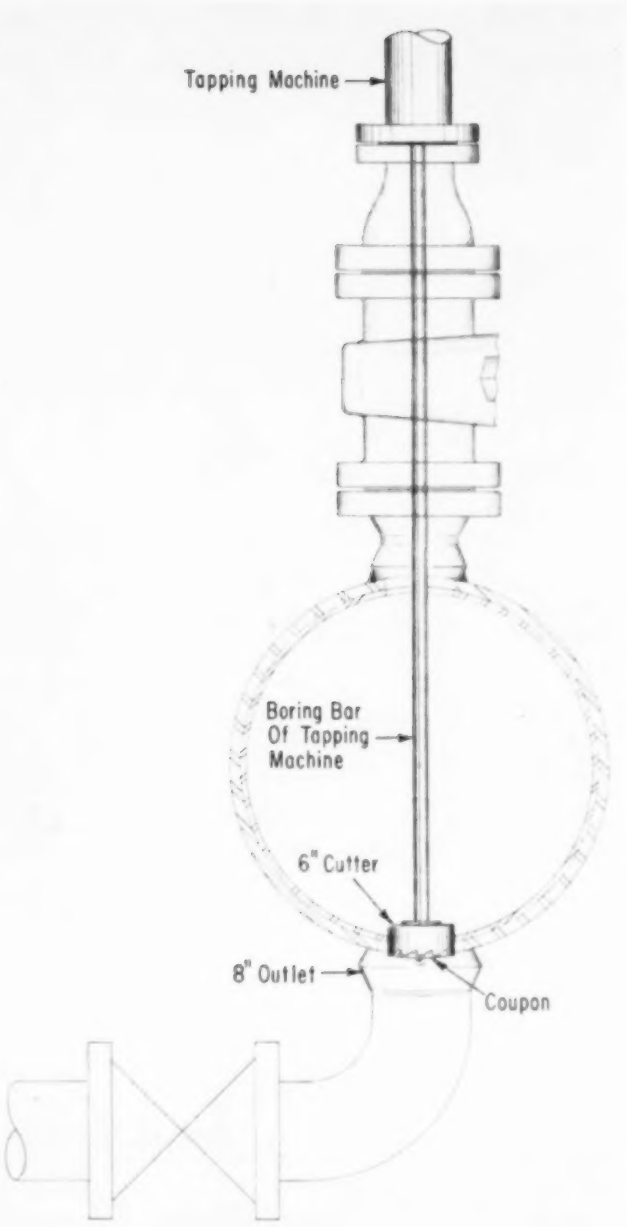
After the plug was lowered into position by the tapping machine, the segments were locked into place. The segments afford the necessary mechanical strength to hold the plug in place against operating pressure. Complete sealing is provided by O-rings on each side of the plug groove. With the plug in place the tapping machine was removed, valve recovered and a blind flange installed.

Two Taps in Six Hours. The job was completed by installation of the new connection and fittings connecting the 8-inch plug valve at the bottom of the line. A second similar new facility was installed the same day using the same procedure. Total working time for the installation of the two drips was only six hours. —**The End**

About the Author

L. Harleston, Fish Northwest Constructors, Inc., Salt Lake, Utah, has had wide experience in the pipe line industry. He was pipe line superintendent on construction of the Pacific Northwest Pipeline as well as pipe line superintendent for construction in the San Juan Basin for Fish Northwest Constructors, Inc. He also participated in the construction of the original Transcontinental Gas Pipeline Corp. line Prior to his present position, he was with Brown & Root, and Ford, Bacon and Davis, and Interstate Natural Gas Company. He has had some 30 years experience in pipelining.





(Above) A full opening gate valve and the tapping machine were attached to the 30-inch flange. An 8-inch elbow and plug valve were installed on the 8-inch opening. With all fittings in place, a 6-inch opening was cut in the top of the line.

(Upper Right) After the coupon cut from the top of the line was removed, the tapping machine was again installed on the gate valve. The cutter was run through the pipe until the bottom was contacted. A tap was made in the bottom, cutting from the inside of the pipe.

(Right) Special flange and plug used for recovering tapping valve.

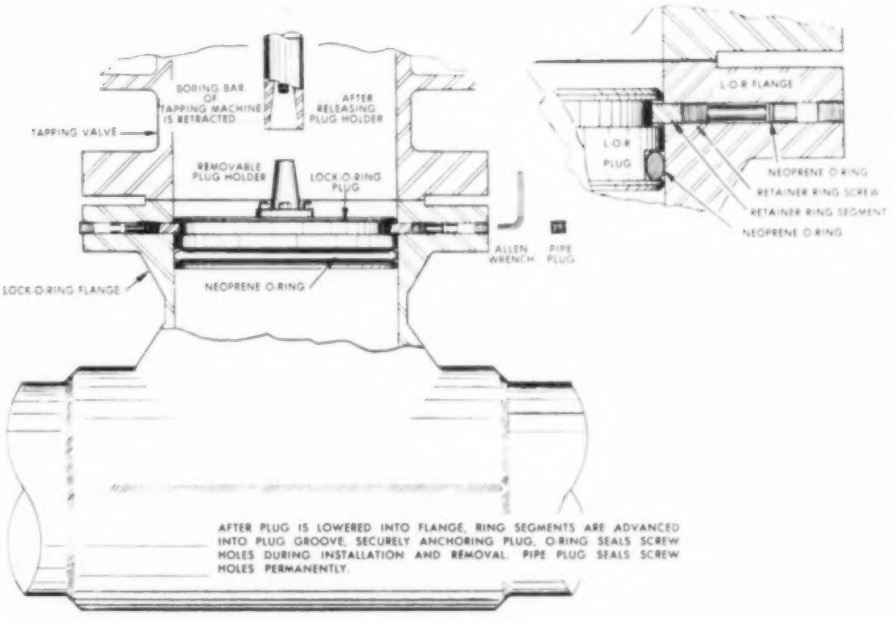

BORING BAR OF TAPPING MACHINE IS RETRACTED
AFTER RELEASING PLUG HOLDER
TAPPING VALVE
REMOVABLE PLUG HOLDER
LOCK O-RING PLUG
L-O-R FLANGE
L-O-R PLUG
NEOPRENE O-RING
RETAINER RING SCREW
RETAINER RING SEGMENT
NEOPRENE O-RING
ALLEN WRENCH
PIPE PLUG
LOCK O-RING FLANGE
NEOPRENE O-RING
AFTER PLUG IS LOWERED INTO FLANGE, RING SEGMENTS ARE ADVANCED INTO PLUG GROOVE, SECURELY ANCHORING PLUG. O-RING SEALS SCREW HOLES DURING INSTALLATION AND REMOVAL. PIPE PLUG SEALS SCREW HOLES PERMANENTLY.

FIGURE 1—General view of double-jointing yard. Pipe-laden barges tie up at pier, pipe is unloaded by crane and placed on roller train. In the background, a joint of pipe is moved along the roller train for storage.

Double-Jointing Speeds Construction of Arabian Line

Assembly-line techniques featured in Aramco's double-jointing yard in Saudi Arabia. Designed for flexibility, the yard will handle pipe from 16-36 inches in diameter.

EFFICIENCY AND flexibility are the main features of Arabian American Oil Company's double-jointing yard at Ras Tanura. Designed for a minimum of supervision, the yard features assembly line techniques with many labor saving devices. One unusual feature is the use of 5-inch drill pipe for the rails which also double as air lines, eliminating the need for a separate air supply line to deliver air to the pneumatic controls.

Aramco built the double-ending yard to speed construction of its 131-mile 22-inch line from the Safaniya oil field to the company's Ras Tanura refinery. Investigation revealed that the utilization of a double-ending yard would reduce four major cost factors: the amount of field welding required, the time that portable camp facilities must be maintained, the number of trips required for transporting and stringing pipe along the right of way, and over-all construction timing.

The 40-foot joints of pipe were scheduled for delivery by water, so the double-ending yard was designed

FIGURE 2—Pneumatically operated kickout jacks shift the pipe from the roller train to the storage racks. Kickout jacks are controlled by a foot pedal.

FIGURE 3—Operators bring both lengths of pipe to the same elevation by means of leveling jacks. Jacks are controlled at a central station at the point of line-up.

and built around a small pier at which barges, loaded with pipe, could be tied and the pipe unloaded for processing in the yard. As the pipe arrives at the pier, it is unloaded by a crane and placed on a roller train. The pipe is then moved manually along the rails to the storage racks or to the beginning of the assembly line for double-jointing.

Pipe Handled Pneumatically. Racks for the storage of the pipe extend laterally on each side of the roller train. The pipe is shifted from the roller train onto these storage racks by means of pneumatically operated kickout jacks. Jacks are located near each of the two support rails for the 40-foot joints. A foot pedal, controlling each pair of jacks, operates a cylinder lifting the jacking arm and ejecting the pipe from the roller train onto a storage rack.

Kickout jacks normally will move the pipe only to one side of the roller train. The main roller train, however, had to be designed to unload pipe to either side. The frame, therefore, was built so the jacking arm could be rotated and (by means of removable pin) hinged on both sides, thus moving the pipe to either side of the roller train. Movement on the storage racks, as on the roller train, is accomplished manually.

Hydraulic Jacks Level Pipe. Pipe comes off the main roller train at the beginning of the double-assembly line. From here the joints are moved manually to the stringer-bead station, where beveled ends to be welded together are cleaned with pneumatically driven wire brushes. At the stringer-bead station, the two joints are first positioned (circumferentially) by being dropped off the rack onto circumferential rollers. Longitudinal seams of the two joints are then offset by approximately 4 inches.

The next step is to lift the two lengths by means of four hydraulic jacks (two for each pipe length) to level and line up the pipe. Jacks are controlled at a central station at the point of line-up. When the pipe is lifted off the circumferential rollers by the leveling jacks, longitudinal rollers on the jack heads take over, permitting manual movement of the pipe in a direction parallel to the pipe length. The two lengths are brought together over the internal lineup clamp head and the hydraulic clamp is then expanded, after which the stringer bead is applied. Application of the stringer bead begins at the twelve o'clock position and is worked down to the six o'clock position on both sides.

Weld Cleaned Between Stations. When the stringer bead is completed, the operator kicks the double-ended joint out of the stringer station by means of a foot-operated pneumatic kickout jack. Pneumatically operated wire brushes are used for cleaning slag from the stringer bead as the pipe moves along the assembly line.

The assembly line continues from the stringer-bead station through four welding stations. As the pipe leaves the stringer-bead station, the 80′ section is rolled manually to three successive stations where the hot-pass, filler-pass, and cover-pass welds are made in that order. Each station is equipped with kickout jacks; between stations, the pipe is rolled manually. In the movement from each station, the most recent weld pass is cleaned of slag, again by the pneumatically powered wire brushes similar to those that are used after the stringer bead has been completed. The fourth station, though not absolutely necessary for this particular job, was constructed for use on future jobs with heavier wall pipe and was utilized on this job for miscellaneous repairs and for taking up the slack from the three other stations.

Pipe Rotated During Welding. A feature of each welding station is variable-speed, electric-motor-driven rollers which rotate the pipe in the welding pass at a speed controlled by the welder. This feature permits the welder to have his work always in a downhand position on the top of the pipe. At his feet, the welder has both start-stop buttons and speed-control buttons.

Each welding-pass station has a combination sunshade and windbreak.

FIGURE 4—The stringer bead is applied to the two joints of pipe. Application of the stringer bead begins at 12 o'clock and continues down to 6 o'clock on both.

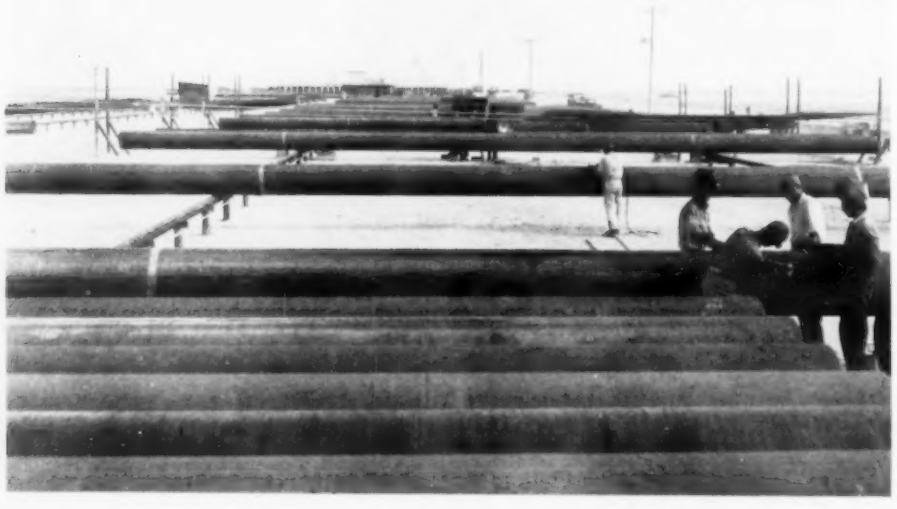


FIGURE 5—Pneumatically operated wire brushes are used for cleaning slag from the welds. Welds are cleaned as the pipe passes along the racks between welding positions.

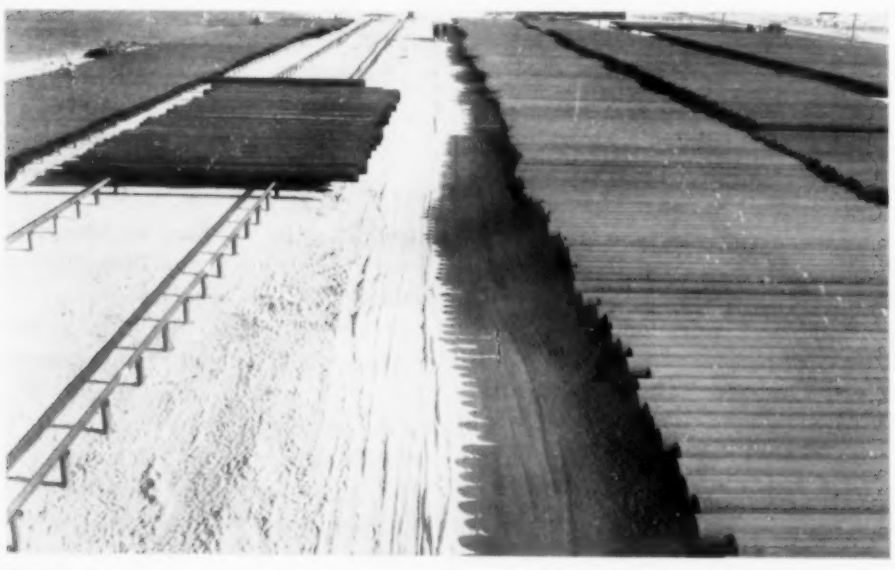


FIGURE 6—The assembly line continues through four welding stations. The fourth station was not necessary for this job, but was included for use on future jobs with heavier wall pipe. It was used for miscellaneous repairs and as a spare station.

The sunshade is suspended on wire rope to allow pipe to roll freely along the line without obstruction. A variable-speed roller mechanism is used at each welding station.

Crane Only Heavy Equipment. The 80-foot pipe joint passes from the last welding station to a storage rack. From the end of this rack, pipe is loaded for delivery to the jobsite. Loading of the welded joints onto trucks, as well as unloading the 40-foot lengths from the barges, is done by a crane, the only piece of heavy equipment in the yard.

At the end of the storage racks, where the double-ended pipe is loaded for stringing along the right of way, a second roller train is installed to allow shifting of pipe from one storage rack to another. The purpose of this is twofold: First, any cutouts required due to faulty workmanship can be shuttled over to the single-joint racks, the weld cut out, and the separate lengths returned through the single joint racks to the stringer station. Second, any breakdown in the transportation operation of hauling double-ended pipe from the racks will not shut down the other operations since double-ended pipe can be shuttled back to the initial storage rack to replace 40-foot lengths as welding operations deplete the single stock.

Rails Double As Air Line. In addition to these primary design features of the double-ending yard, there are other items of interest. All the supports and rails are constructed of salvage material. The supports are 5-inch drill pipe driven as piling. These are more economical than forming and pouring concrete foundations. The rails, also 5-inch drill pipe, can be used for air lines as well, thus eliminating a separate pipeline for air supply. The air supply for the entire yard is provided by one 500 cfm air compressor connected to the central system through an air receiver and trap to insure dry air.

Spare Welding Machines. The welding machines are all driven by electric motor for economy of operation and maintenance. A transformer is installed, and conduit runs are utilized to feed the electric machines at

the welding stations. Two welders work at the stringer-bead station and one welder at each of the other stations. To insure minimum lost time due to equipment difficulties, three welding machines are installed at the stringer-bead station and two at each of the other stations, providing a spare machine at each location.

Minimum Supervision Required. With the convenient layout, simple equipment and efficient job methods, minimum supervision is required to operate the yard satisfactorily. Two Aramco supervisors are used: one overseeing the stringer and welding, the other watching repairs and pipe movements throughout the yard. A Saudi Arab contractor's men do all the line-up, stringer bead, filler and cover passes. They take charge of operating the line-up clamp, pipe movements, and all other work in the yard.

Double Stacking Possible. When the double-ending yard was completed, its storage capacity was 1750-40-foot joints of 22-inch pipe single stacked or 3500-40-foot joints double stacked. The crane is used when double stacking is required, but once the pipe is double stacked, it can be lowered manually. This is accomplished by stationing a man on each end of the lower joint, holding back on it with a pipe-rolling snipe (similar to valve-wheel wrench but designed to grip the end of the pipe) while the chocks are removed. The pipe is then released slowly while the upper joint drops onto the rails. The storage capacity for double-ended joints 80 feet long is 250; however, these joints can be shuttled back on other racks, thus increasing the maximum storage capacity to 180,000 feet, or approximately 34 miles of 22-inch pipe.

To add to the flexibility and efficiency of the double-ending yard, a further economy feature was introduced into the basic design: With only minor adjustments, pipes from 16 to 36 inches in diameter and in 30 or 40-foot lengths can be handled when the current operation is completed. —The End

FIGURE 7—Each welding station has a combination sunshade and windbreaker. The sunshade is suspended on wire rope to allow pipe to roll freely along the line without obstruction.

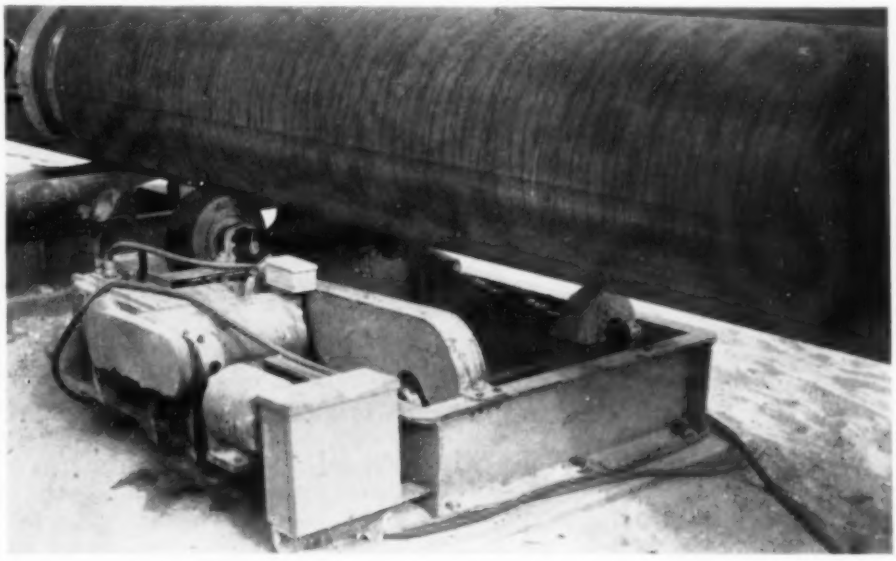


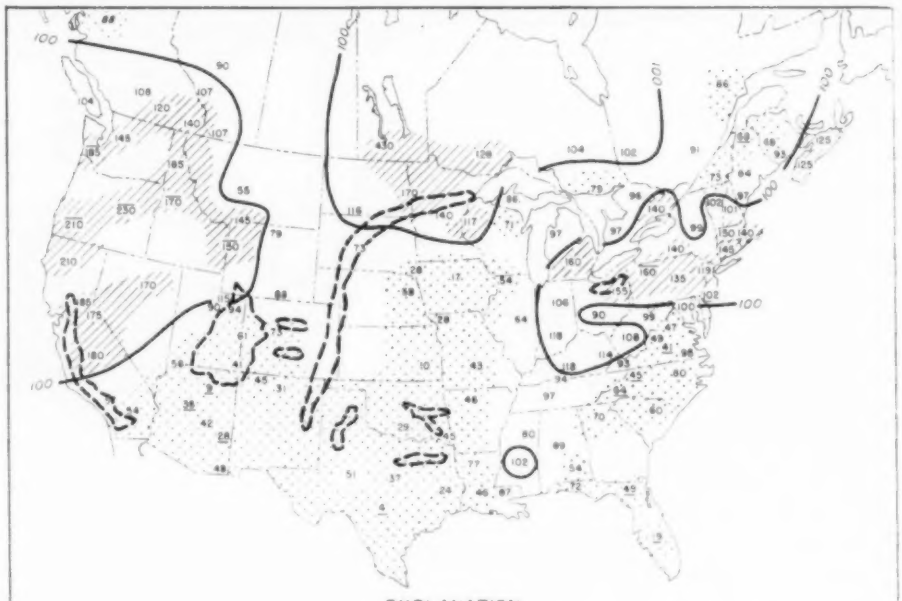
FIGURE 8—Variable speed rollers rotate the welding stations. This feature permits the welder to have his work always in a downhand position on top of the pipe. Rotation is controlled by the welder.

FIGURE 9—The general layout of the double-jointing yard indicates the scope of the operation. Storage capacity was 3500-40-foot joints, double stacked. The maximum capacity for double-ended joints was approximately 34 miles of 22-inch pipe.

CONSTRUCTION PROGRESS REPORT

Are Cross-Country Water Lines

At last year's Pipe Line Contractors Association meeting an engineering panel discussed opportunities in pipe line transportation of materials other than oil and gas products. Here is a brief report on water supply problems by a leading engineering consultant pointing out some of the year's most important developments.


EXPLANATION
Streamflow Deficient; Among Lowest 25% Of Record For The Year.
Streamflow Excessive; Among Highest 25% Of Record For The Year.
Some Of The Areas In Which Planners Envision Large Water Movements.
185 Greater Than Any Percentage Previously Recorded For The Year.
9 Less Than Any Percentage Previously Recorded For The Year.
45 Numbers Are Indexes Of Streamflow For The Period, Computed As Percent Of Median (Midvalue) For The Standard Period 1921-45 Except Those In Italics.

Prepared by U. S. Geological Survey

Indexes of streamflow for water year ended September 30, 1956, point up needs of water-short areas.

Skyrocketing demands point toward a greater use of larger diameter pipe lines for moving water supplies. Pipe line contractors have the know how and equipment to handle this specialized job.

By Francis J. Wilson
Arkansas Basin Development Association, Incorporated
Tulsa

DESPITE RECORD pipe line construction in recent years, there appears an even greater challenge ahead. Laying of cross country water pipe line carriers could well assure the continued prosperity of both pipe line contractors and equipment manufacturers.

Movement of water from areas where there is an abundance, to those areas of the U. S. where water is desperately needed could be a growing field for pipelaying specialists. This need for water is worldwide, and so far, transportation by pipe line appears to be the most feasible and economical answer.

Smart pipeliners might well be looking into the opportunities in the field of water movement. This should be obvious to anyone who has taken the time to read in the papers during the past three or four years of the serious plight in which many of the communities in the southern two-thirds of the U. S. found themselves as a result of a drought which has been characterized by the U. S. Geology Survey as being one of the three worst in the past 600 years. (See Map)

In even a small-sized city there are literally hundreds of miles of mains and smaller lines that carry water from the treating plant to consumers' homes or industries. In most places there are relatively large lines that carry water from storage reservoirs to the city water works. These lines have been engineered and laid, for the most part, without the know-how and services of the pipe line contractor.

The pipeliner has certainly met the needs of the oil and gas industry. He has even pioneered in new fields such as the 110 mile coal slurry pipe line into Cleveland and the 72 mile gilsonite line which extends from Eastern Utah into Grand Junction, Colo. Undoubtedly there will be other specialized lines; they will require both daring and "know-how" if they are to be successful.

But, in the meantime, who is going to lay the literally thousands of miles of lines ranging from two feet to 15 feet in diameter that will carry the vast amounts of water needed by our growing populations and expanding industries? Who, for instance,

in the Contractor's Future?

will build the lines that will transport approximately 1,800,000 acre-feet of water from the Feather River area of northern California, some 700 miles, into San Diego County? Who will build the lines that will carry water from East Texas into the Dallas-Fort Worth area? What company will get the job of bringing water from southeastern Oklahoma into central Oklahoma? Perhaps it's only a dream but some day it may be necessary to bring water from the northern border of the U. S. all the way along the eastern foothills of the Rockies into Texas and New Mexico. (See Map)

Demand Hiked by 1975. There seems to be every assurance that this demand for water will continue to increase at a phenomenal rate. Factors which lead to this conclusion include:

1. **Increase in per capita consumption.**

At the present time the average daily home use in the U. S. is more than 150 gallons per person. It is estimated that by 1975 the average use throughout the country will have increased to 250 gallons per capita per day, or 10 times as much as was used in 1900. If all uses are included, the nation as a whole will need 450 trillion gallons daily.

2. **Industrial use of water has increased at a fantastic rate.**

From a national standpoint, industry now uses about 47 percent of the water, agriculture about 45 percent and public supply about 8 percent. According to the American Waterworks Association, by 1975 industry may be using two-thirds of all the nation's water.

3. **The tremendous demand for water by the Southwest.**

There has existed in many spots in the Southwest what might be called a "sick" agriculture. This requires vast amounts of storage for flood waters that are now being wasted and which agriculture needs badly. Furthermore, the trend of industry to locate in the Southwest has been increasing. Establishment of many water-using industries is essential to the progress of the Southwest so as to balance the so-called "sick" agricultural spots. This water must be distributed.

Population Growth Needs. All of the above factors must be compounded by our unprecedented population growth. As late as 1946 the Census Bureau forecasted the U. S. population would be 153 million in 1960 and would reach an ultimate peak of 164½ million around 1990, but the wartime babies boom, which everyone thought would be only temporary, still shows no sign of a letdown. The population was 164½ million in 1955, some 35 years ahead of the experts' predictions. Now it is expected to reach 180 million by 1960 and barring some sort of a catastrophe it should pass 200 million before 1970. In simple language this all means more people using more water per person and therefore the need for more facilities to bring this water to them.

Government-Proposed Network. The seriousness of the water supply situation has been recognized by Fred A. Seaton, the secretary of the interior. His department has already visualized the need for a national network of water pipe lines by 1975. Although the federal government has not yet built any lines, this shows how the planners are thinking. For example, in Northern Ohio, which has never been regarded as a critical area, plans are in the advanced stage for pipe lines which will serve eight counties in the Lake Erie Watershed Conservation Foundation area.

A recent report from Florida says that the ground water table is only a few inches above sea level. Perhaps one day it may be necessary to construct large water lines in that state to meet its growing needs.

Research Will Help. The intense campaign to clean up sources of pollution and thus reclaim water that would otherwise be unfit for use is another step in the direction of increasing the available supply.

The research program to remove salt from sea water and thus make it available for use is another effort which shows clearly how desperate our fresh water supply situation really is.

How Contractors Feel. A few pipeliner contractors who have had some experience in water movement welcome these possibilities as a great opportunity. Others tend to be skeptical and reluctant to change from their methods and go into the building of large reinforced concrete type jobs. Others say if the job needs to be done they can certainly adjust their methods and do it. Undoubtedly many of the techniques devised and perfected by pipe line contractors would help solve water pipelining problems, too.

Perhaps some of these new lines will be of welded steel pipe with concrete lining, coated and wrapped on the outside and with cathodic protection. The life of such lines would compare favorably with concrete pipe. In one study the author made in 1953, such a line, 66 inches in diameter, seemed to have a slight economic advantage over reinforced concrete pipe. Of course, the picture may be changed now as the result of increased steel prices.

But, whatever the materials, whatever the size and whatever the distance, the movement of water may be the greatest challenge that the pipe line industry has yet encountered.

About the Author

Col. Francis J. Wilson, U. S. Army, Retired, is executive vice president of the Arkansas Basin Development Association, Inc., Tulsa, and also a consulting engineer. He was graduated from the U. S. Military Academy in 1922 with a B.S. degree; from Cornell University in 1925 with a C.E. degree, and from the Command and General Staff School in 1941.

Col. Wilson was an officer in the Corps of Engineers, U. S. Army, from 1922 to 1946, when he retired for physical disability. He has been engaged in numerous water reclamation and planning projects. He is a member of numerous engineering societies and serves on many committees studying water resources and transportation problems.

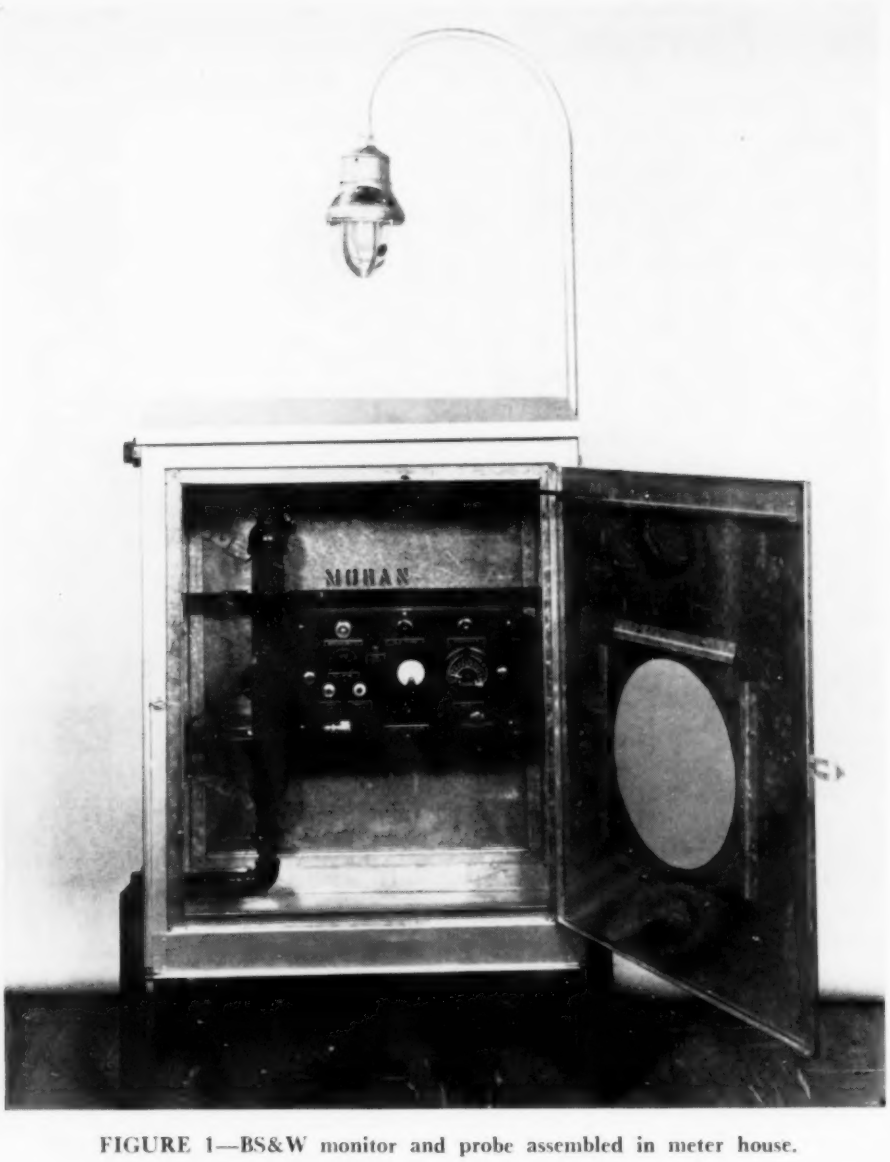


FIGURE 1—BS&W monitor and probe assembled in meter house.

BS&W Monitor Guards Pipe Line Specs

Specification oil assured at automatic custody transfer installations by capacitance sensitive instrument.

By Howard J. EnDean
Gulf Research & Development Co., Pittsburgh, Penn.

ASSURANCE THAT CRUDE oil delivered to custody tankage is within pipe line specifications for basic sediment and water has been one of the major problems in development of automatic custody transfer facilities. Reproducibility of dielectric constant of crude oil contaminated with water has enabled the use of capacitance-sensitive instruments as a solution.

The monitor, a capacitance-sensitive instrument described hereafter is an adaptation of the capacitance product analyzer, successfully used in pipe line and production operations for batch interface and BS&W recording. In custody transfer applications, the monitor continuously inspects the BS&W content of crude oil being delivered from the separator and/or treating equipment to tankage. On BS&W exceeding specification, the monitor will actuate control valves to reroute crude to wet oil storage or through treating equipment.

The monitor assembly, Figure 1, includes a pipe line probe and a control instrument. The probe, illustrated in Figure 2 is essentially a fixed capacitor, sensitive to changes in the dielectric constant of materials passing between the centrally located electrode and wall of the surrounding pipe.

Figure 3 shows the control instrument. Setting of the BS&W limit dial determines the BS&W content that will energize the control relays. The time delay unit shown can be set to allow a limited quantity of contaminated crude oil to pass to tankage where such deliveries are acceptable. Push buttons labeled current level check and operation check are for checking instrument operation and calibration.

The current level adjust dial, when used in conjunction with the current level check button, determines condition of the one radio tube in the assembly indicating when replacement is desirable.

The plug above the zero adjust label protects the calibration adjust-

ng screw. Rotation of this screw shifts the calibration of the instrument to match the crude oil of a specific installation.

Three pilot lights located at the top of the instrument show whether the crude is within specification and what operation is taking place.

In a standard installation, the following would be an operating sequence. With acceptable crude oil being delivered to tankage, the pilot labeled merchantable oil would be lighted. When the setting of BS&W limit dial is exceeded, the merchantable oil light goes out, and the excess BS&W light and time delay units are energized. If delivery of contaminated oil continues beyond the time delay setting, the excess BS&W light is extinguished and the oil by-passing light is energized. At the same time, relays are energized for valve operation and the warning light shown on the gooseneck of Figure 1 is lighted. When oil passing through the probe is again within specification, the relay controlled valves direct crude oil to tankage and the monitor is automatically reset.

The range of the monitor shown in Figure 2 is 0 to 3 percent BS&W with a 0 to 60-minute time delay. Both specifications can be varied to suit installation requirements.

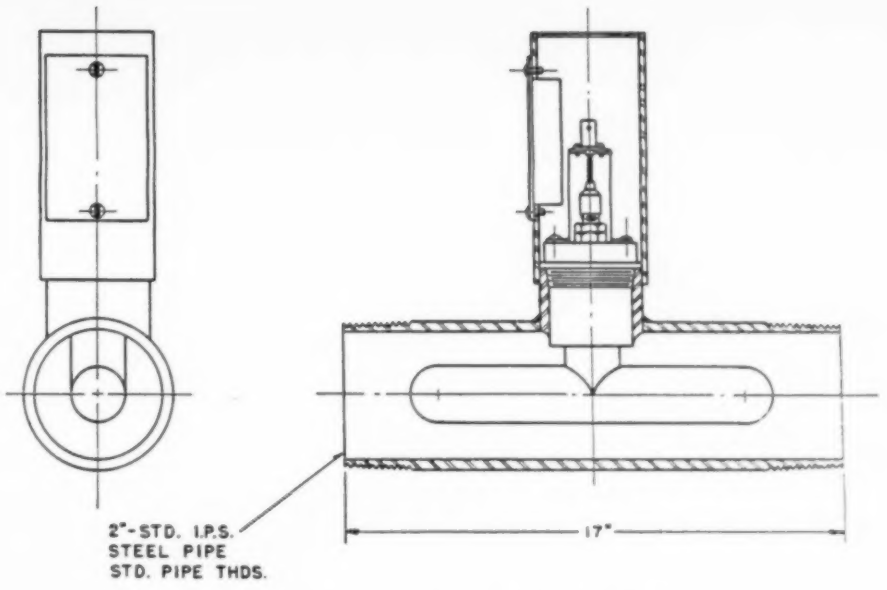


FIGURE 2—Standard bypass probe (two-inch).

A typical calibration is shown in Figure 4. For BS&W ranges up to five percent, instrument response is essentially linear.

The effect of temperature variations on monitor calibration is illustrated in Figure 5. In developing data for this figure both probe and instrument were subjected to the temperature variations indicated. These test conditions are of maximum severity, since in most operations, crude oil temperature variations will be less than atmospheric. On the basis of these tests it is anticipated that with seasonal adjustment operation over a 0 to 3 percent BS&W range will be accurate to $\pm$ 0.1 percent BS&W.

The monitor system is illustrated by the block diagram, Figure 6. The instrument employs a crystal oscillator whose plate-parallel-tuned circuit consists of a probe (cylindrical capacitor) in parallel with a variable capacitor (adjusted by the BS&W limit dial), and a fixed inductance. A discontinuity or step takes place in the tube D-C plate current when the plate-tuned oscillator goes into, or out of, oscillation as a result of a change in

About the Author

Howard J. EnDean attended Purdue University and Carnegie Institute of Technology, receiving a B.S. degree in metallurgical engineering in 1938. Since graduation, he has been employed successively by Standard Oil of Indiana, Engineering Laboratories, Inc., and Gulf Research & Development Company, his present employer, in the fields of drilling, production, pipe line, and reservoir engineering, with particular reference to the instrumentation and equipment associated with these four fields. He is a member of the AIME, and is a licensed professional engineer in the state of Pennsylvania.

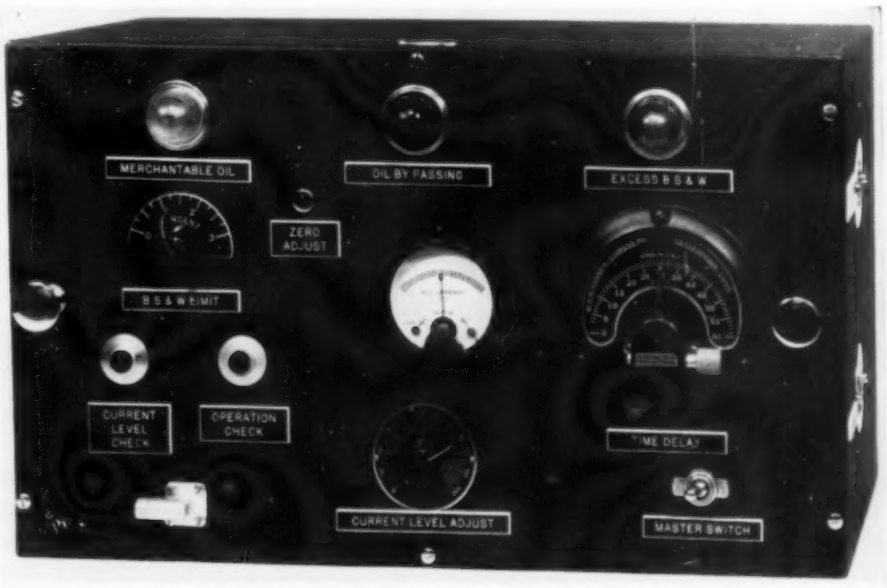


FIGURE 3—Front panel view of BS&W monitor.

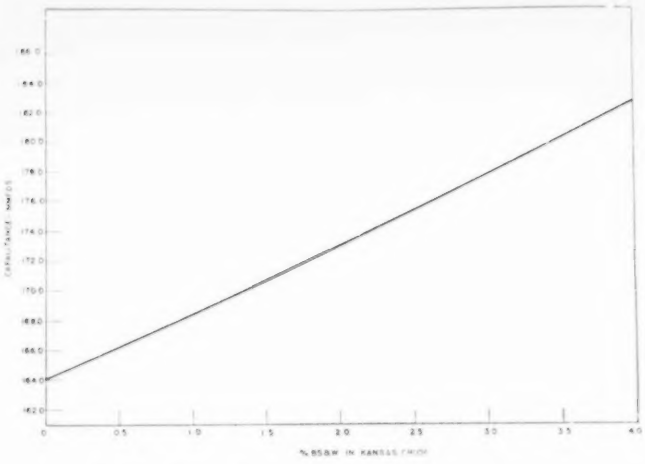


FIGURE 4—Calibration of BS&W monitor.

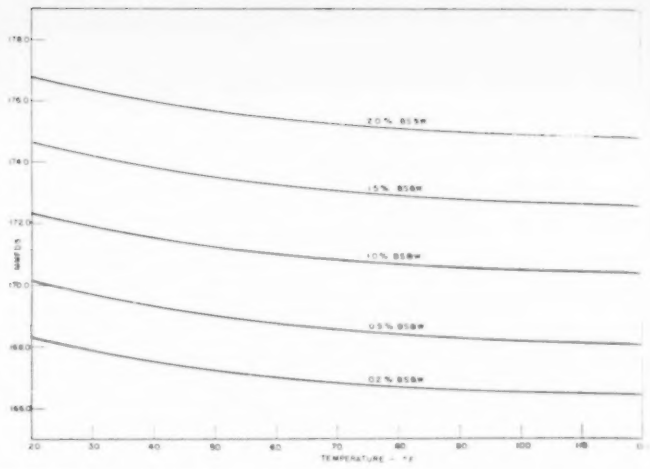


FIGURE 5—BS&W monitor calibration change vs. temperature.

the tuning of the plate circuit. This tuning is accomplished by the varying BS&W contamination passing through the probe.

With the tuned-plate circuit inductive compared to the natural frequency of the crystal (probe capacitance is small), the D-C plate current flow is low. As the probe capacitance is increased beyond the control point setting, the tube snaps out of oscillation and the D-C plate-current abruptly increases. A current-sensitive D-C relay on the tube plate circuit is energized by the abrupt increase in D-C plate current. This relay then energizes a time-delay component. If BS&W contamination persists beyond the time setting, circuit control relays are actuated. When BS&W is reduced below the control point indicated by the limit dial, oscillations are resumed and the D-C plate current decreases. This de-energizes the D-C plate circuit relay which in turn de-activates and automatically resets the time-delay mechanism.

How the monitor is applied to an automatic custody tank battery will depend upon arrangement of equipment and the function to be performed by the instrument. It is anticipated that a bypass type probe arrangement will be standard since it maintains turbulent flow in the probe and assures thorough mixing of fluids. This arrangement also permits maximum flexibility since the monitor may be placed at any location convenient to operations.

Application of a monitor in one type of automatic custody battery is shown in Figure 7. In this installation, crude oil adjacent to the outlet of the settling tank is continuously inspected. Excess contamination will be directed to the sump for rerouting through the treating system. An auxiliary control system is shown by dashed lines whereby the monitor can also be used for chemical pump injection control.

Another type installation is shown in Figure 8. In this application, oil from wells continuously producing BS&W contamination above pipe line specification goes directly to wet oil storage. This tankage delivers to a centrally located dehydration unit. Wells normally producing clean oil, which may at times produce water in excess of requirement, are directed through the line incorporating the monitor bypass. When contaminated oil exceeds the monitor setting for BS&W, the motorized control valve directs the non-specification crude oil to the wet oil tank. Rerouting to the clean oil tanks will be automatic when BS&W content is reduced to specification.

The first monitor installation for BS&W control in an automatic custody tank battery has been in operation for over one year. Several other installations have been made with

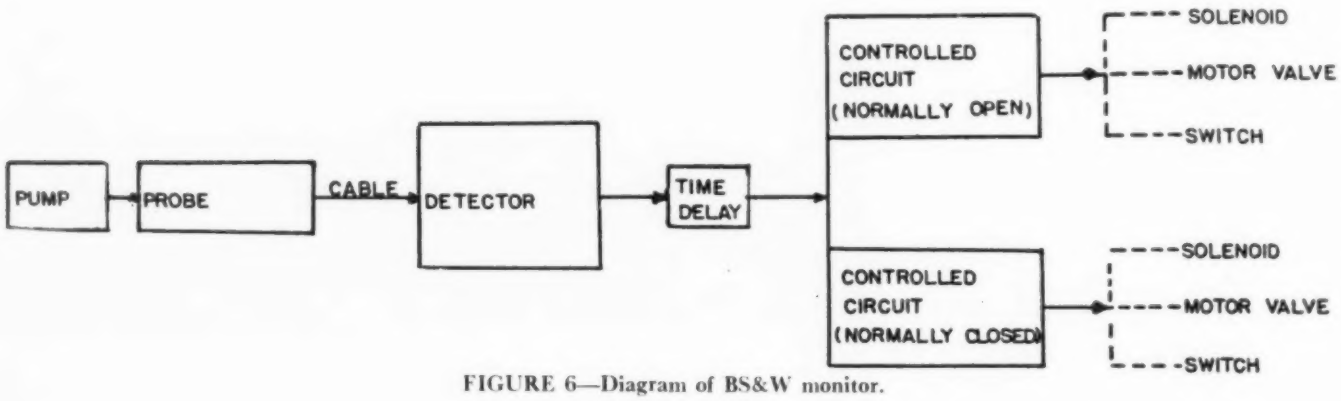


FIGURE 6—Diagram of BS&W monitor.

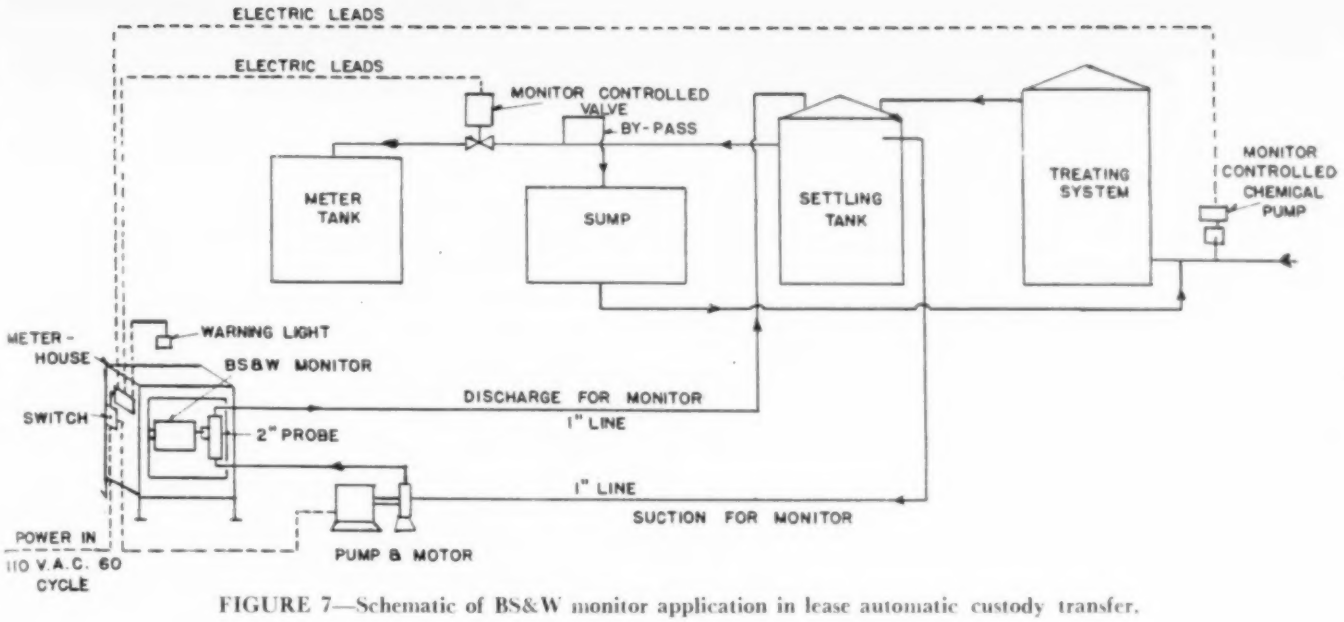


FIGURE 7—Schematic of BS&W monitor application in lease automatic custody transfer.

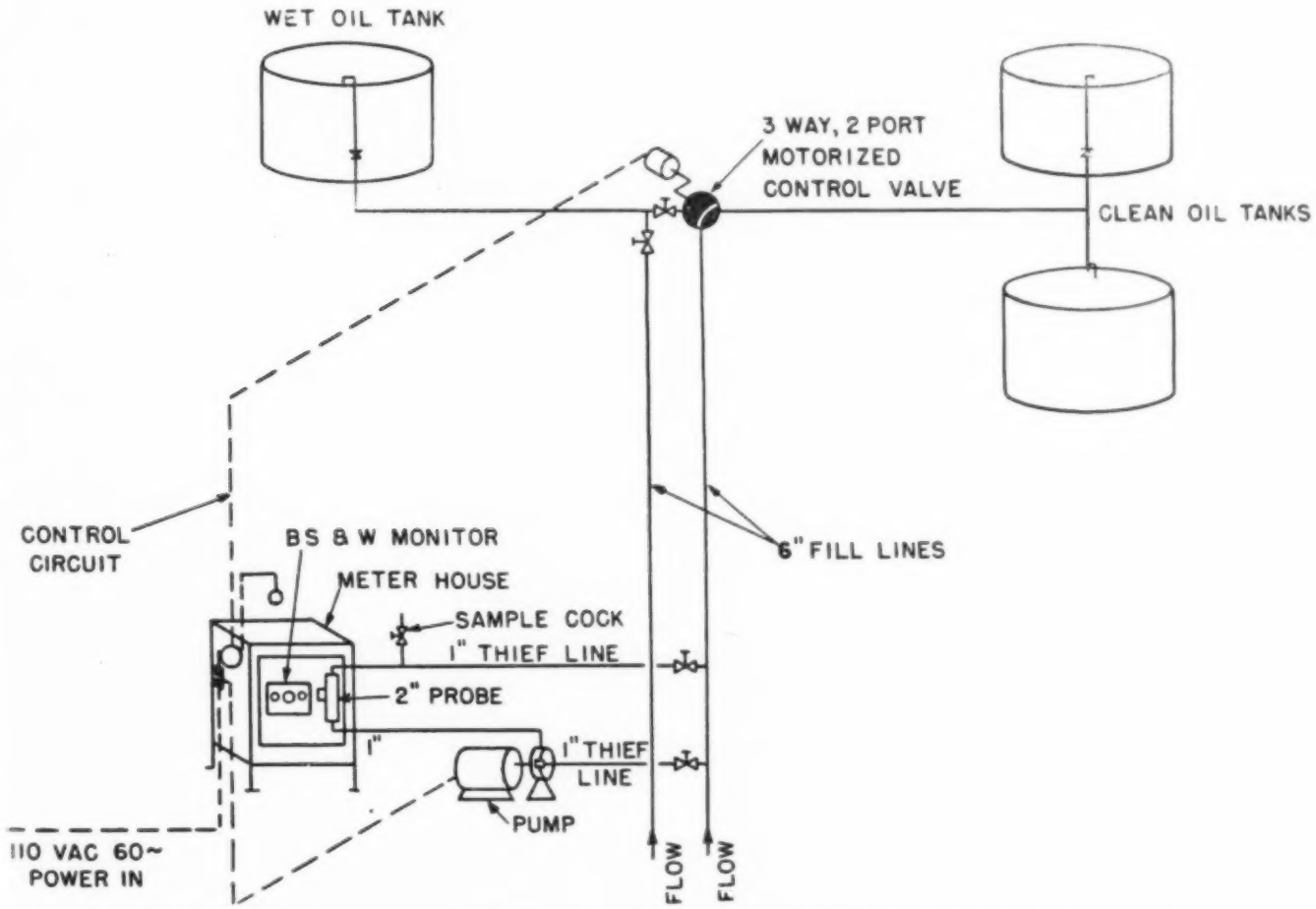


FIGURE 8—Schematic layout of BS&W monitor for control of clean oil at unattended discharge station.

very indication to date that the instrument will meet industry requirements. The device in its present form meets specifications for BS&W control in the API informational bulletin on automatic custody transfer. The monitor, developed and patented by Gulf Research & Development Company, will be available to the industry.

While developed primarily for BS&W control in automatic custody tank batteries, the monitor is adaptable to any process where changes in dielectric constant of fluids are suitable for control purposes.—**The End**

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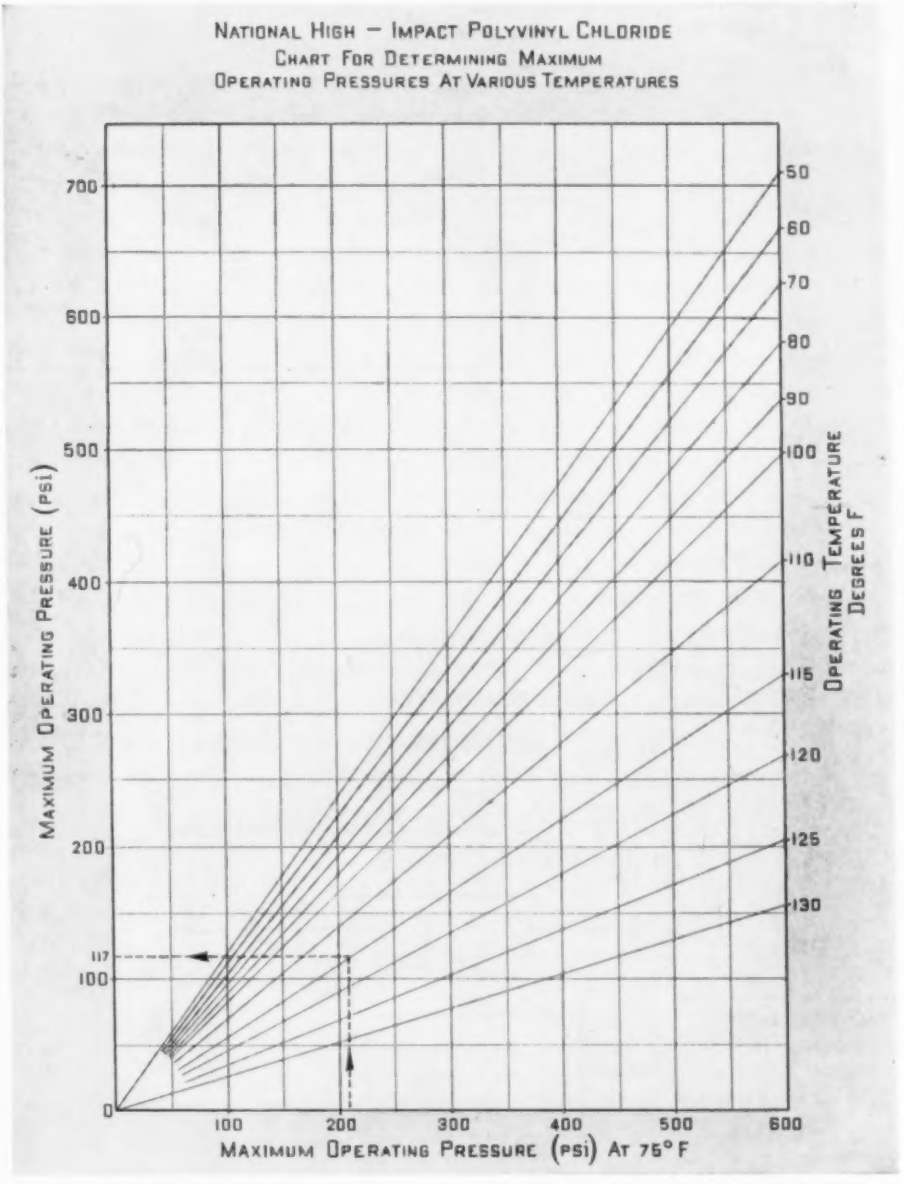
Engineering Design —40—PVC Pipe Limiting Conditions

Polyvinyl chloride pipe can be employed up to 130° F. in the case of high impact and up to 150° F. in the case of normal impact. Creep considerations at higher temperatures result in excessive derating of the recommended pressures above these points. The chart presents adjustment factors to be applied to 75° F. ratings for service at higher temperatures for high-impact materials. The recommended pressures at the higher temperatures are based on creep data and assume an allowable expansion over the life of the installation. From an ASME paper entitled "Plastic Pipe in the Petroleum Industry," by George C. Anderson, National Tube Division, United States Steel Corp., presented to the Petroleum Division meeting in Tulsa, September 22, 1957.

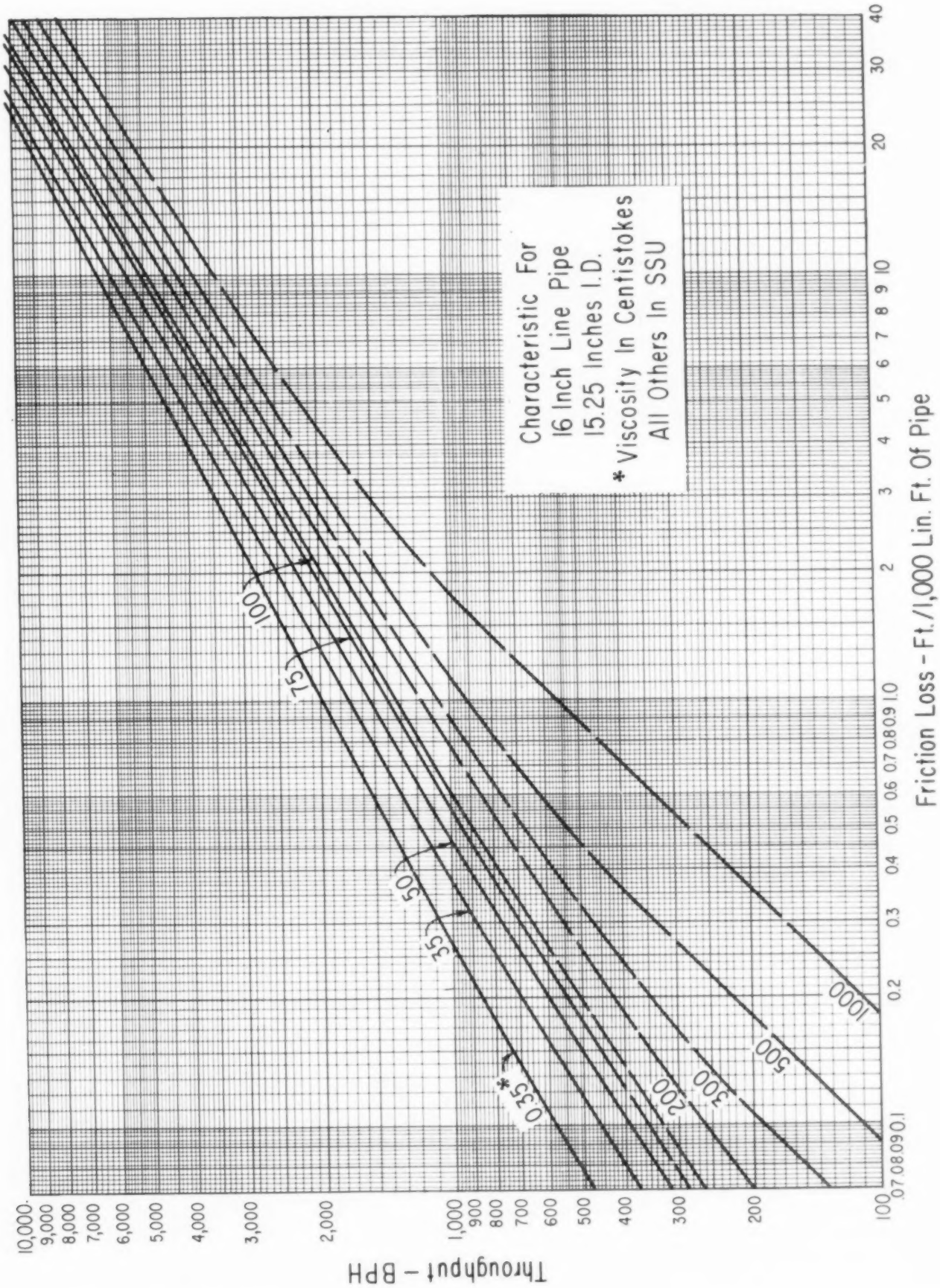


Engineering Design —41—Head Loss Charts for Various Sizes of Pipe

Friction Loss Characteristics for 16-inch pipe were computed by a pipe line company using data of the Hydraulic Institute. Use of this data in laminar and critical zones is adequate for estimates. Friction losses in transition and complete turbulent zones are very accurate.

(Chart 7 in a series of 19—16-inch line pipe)

ENGINEERING DESIGN 41



Four Corners Pipe Line Moves West

After the Four Corners pipe line ditch is dug, steel pipe is strung in 40-foot joints at a time. Next step in the line is welding the joints together. The 750-mile, $50 million crude oil system spreads through Arizona, Utah, New Mexico and Colorado, and will transport oil to California. Initial capacity of the 16-inch pipe is 30,000 barrels per day. Construction on the line will be completed in February.

Contracts Let on 367-Mile Section Of Trans-Canada's 2294-Mile Pipe Line

Five spread contracts were recently awarded on the Northern Ontario Pipe Line-Crown Corporation 367-mile section of Trans-Canada Pipe Line, Limited's 2294-mile line from Alberta to eastern Canada.

Northern Ontario is owned by the Ontario and Canadian governments and is responsible for the section from Port Arthur to Kapuskasing, Ontario.

Winning bidders and their mileage spreads on the $20,827,789 project include Nelen Ltd. and Associates, 63.6 miles; Morrison-Shivers, Ltd., 48.1 miles; Majestic Contractors, Ltd., 70.9 miles; River Construction Corp., Ltd., 91.3 miles, and Mannix Co., Ltd., 92.9 miles.

Because of the unusual ditching problems to be encountered from a rock layer that covers much of the province, contracts average $10.19 a foot. One section in Ontario has 35 miles of solid rock ditch.

Trans-Canada accepted bids in December on more than 500 miles of 30-inch gas line linking the remaining portion of its project. Construction for Trans-Canada in 1958 also includes the completion of the 30-inch line between Port Arthur, Ontario and Toronto and at least three compressor stations in western Canada. This will finish its $378 million project extending from Alberta to Montreal.

Companies Plan Gas Line From Oklahoma to St. Louis

Plans for construction of a 425-mile gas pipe line from Pottawatomie and Okmulgee counties in Oklahoma to St. Louis have been presented to the Federal Power Commission by Mookl Chemical and Gas Company and Missouri Transmission Corporation.

Mookl and Missouri Transmission will be bidding for a piece of the gas market in St. Louis presently served by Mississippi River Fuel Corporation.

Tentative plans call for Mookl to build a 170-mile line to the Missouri border in Delaware County, Okla. Missouri Transmission will construct the final 255-mile line through Missouri.

Cost of the first portion of the 16-inch line, extending through Okla., together with a compressor station is estimated at $12.5 million. The initial capacity will be 100 Mmcf per day with a potential of 150,000 Mmcf daily.

Fish Engineering Corporation of Houston has been contracted to do preliminary engineering and costs studies; DeGolyer and MacNaughton, Dallas, is preparing reserve estimates.

Victor J. Hermal, president of Mookl Chemical and Gas Company, and Eugene Williams, president of the Missouri Transmission Corporation, are the organizers of the project.

Texas Pipe Line Company Sells Oil Gathering Lines

Texas Pipe Line Company has sold its gathering crude oil lines in Oklahoma to the Kerr-McGee Oil, Inc. This sale is Kerr-McGee's second purchase within a month.

The 800-mile system includes lines covering the areas of Seminole, Maysville and Velma and will add an estimated 9000 barrels per day to the Kerr-McGee pipe line capacity.

The transfer will become effective Feb. 1, 1958.

This transaction follows the purchase of a 1100-mile gathering system in Oklahoma by Kerr-McGee from Gulf Refining Company.

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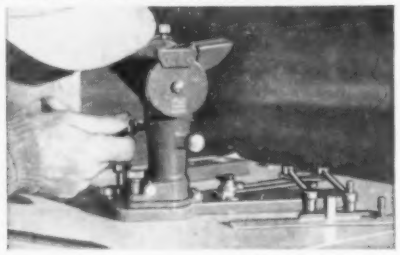

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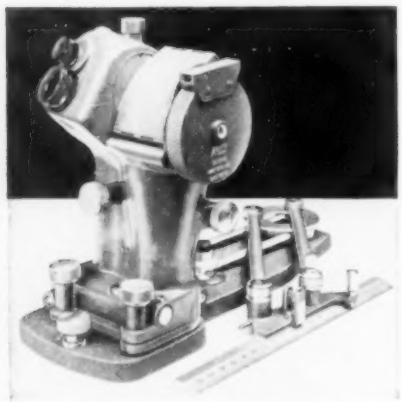

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ASCE Pipe Line Division Meets in Chicago Feb. 24

The Pipe Line Division program for the American Society of Civil Engineers convention will be held February 24 through February 26 at the Sherman Hotel in Chicago.

The Wednesday afternoon session covering pipe line construction will present papers on: "Pipe Line Field Welding and Quality Control Methods," A. G. Barkow, Natural Gas Pipeline Company of America; "Fluid Friction in Pipelines," R. F. Bukacek, Illinois Institute of Technology; "Feather River Project," Robert Edmonston, A.M. ASCE, and Edward Jackson, Calif. Department of Water Resources; "Procedures for Testing Pipeline Efficiency," J. N. White, Panhandle Eastern Pipeline Company.

The program opens Monday morning with a joint session concerning three adjuncts of the pipe line industry—Pipe Lines, Highways, and Surveying and Mapping Divisions.

A Monday afternoon general session on computers will cover: "Characteristics of Digital Computers," John P. Nash, Lockheed Aircraft Corporation; "Development and Integration of Electronic Computation Into Highway Engineering Operations," H. A. Radzikowski, U. S. Bureau of Public Roads; "Electronic Computers as Engineering Tools," John J. Kozak, Calif. Division of Highways; and an open panel discussion on computers.

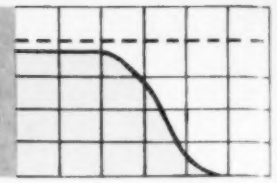
Tuesday's program highlights a field trip to Natural Gas Pipe Line and Texas Illinois' Joliet meter station and laboratory, plus a visit to the Hersher field underground storage facility of Natural Gas Storage Company at Kankakee.

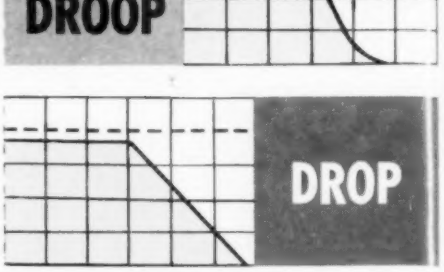
$180 Million Construction Undertaken by Yacimientos

Construction of an oil pipe line from Tucuman to San Lorenzo and from Lujan de Cuyo to La Plata will be undertaken soon by the Argentina State oil agency, Yacimientos Petroliferas Fiscales.

The $180 million contract with TIPSA consortium also calls for a gas line system from Campo Duran to Buenos Aires as well as a treating plant at Campo Duran for separating gases.

NO DROOP





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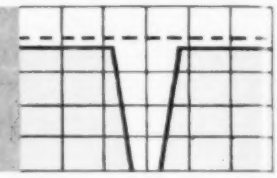

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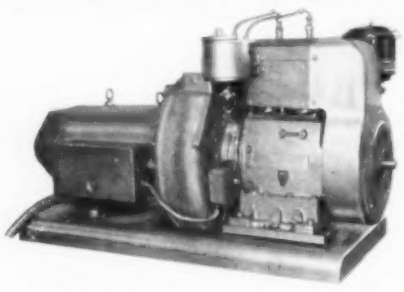

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Contracts Let on Sinclair Crude Oil Line in Texas

Contracts for the second section of Sinclair Pipe Line Company's crude oil pipe line from North Texas to Houston have been let to Lone Star Pipe Line Constructors, Inc. of Dallas and Golightly Construction Corporation of Houston.

To run 149 miles from Teague, Texas, to Houston, the line is composed of 20-inch pipe and is a continuation of the carrier from Jacksboro to Teague that consists of 152 miles of 18-inch completed in 1956.

Purpose of the line is to increase the company's capacity to move southern Oklahoma, North Texas and East Texas crude into the Gulf Coast refining area. It will replace an outmoded, small diameter system.

650-Mile Oil Line Planned By Westcoast Transmission

Westcoast Transmission Company, Ltd. confirmed plans to build a 650-mile crude oil line running from the Peace River area to Vancouver, Canada.

Construction will begin on the $100 million line when further knowledge is obtained on how much oil will come from the area and market potential.

Westcoast is interested in providing an outlet for fields being developed in the Boundary Lake, Fort St. John and Buick areas of British Columbia.

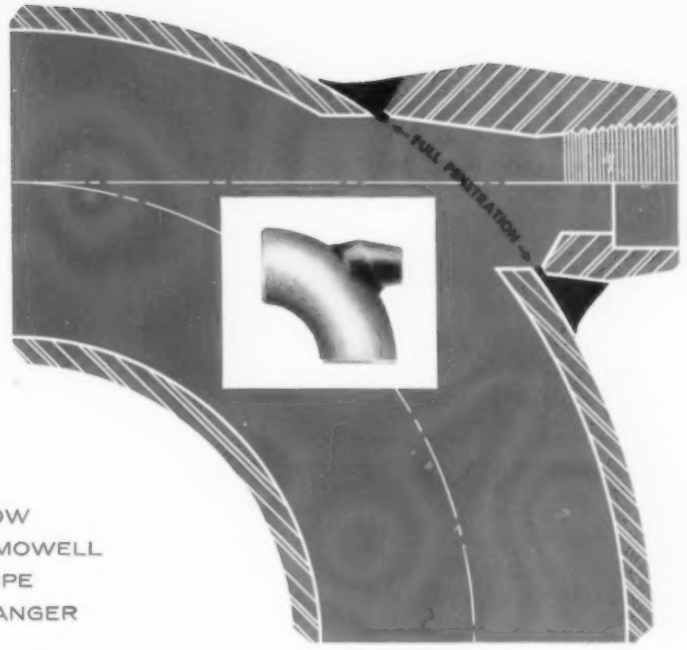
With these fields in the early stage of development, work on the pipe line may be two years away. It will take about a year to build the project.

Texas Eastern Receives Temporary Authorization

Texas Eastern Transmission Corporation has been given temporary Federal Power Commission authorization to construct 59 miles of 30-inch loops on its main line between Kosciusko, Miss., and Uniontown, Penn.

Cost of the construction project will be about $6 million; Texas Eastern stated in its FPC application that it had the necessary pipe on hand and would save nearly $2 million by installing the pipe now as continuations of previously authorized loops.

The new additions will increase the combined system capacity to 102 MMcf per day.



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Construction on Muskegon Line Complete; To Begin Initial Operation This Month

Muskegon Pipe Line Corporation's 166-mile crude line, which extends from Griffith, Ind., to Muskegon, Mich., will begin initial operation this month.

Crude will be delivered by the ten-inch line to Muskegon refineries of Aurora Gas Company and Naph-Sol Refining Company.

Initial capacity of the line is 26,000 barrels per day; it will receive crude oil from the Service Pipe Line at Griffith.

Hydrostatic tests of the first 50 miles of the line were to 1500 pounds; the remainder is being tested with oil.

The line will be operated by Service Pipe Line Company, which handled construction of the project.

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The large capacity truck-mounted compressor unit shown in the illustration servicing a tank truck, provides on-the-job AIR SERVICE for inflating tires, operating air wrenches and a complete line of pneumatic tools commonly used in oil field and pipe line operations.

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Parrott-Hodnett of Wichita and Hutchinson, Kansas, have built up their own unit which fits exactly the available space in their service car as shown here. A Model VF4 Wisconsin Heavy-Duty Air-Cooled Power Unit is direct-connected to a Quincy air compressor and the owner may also add a high pressure pump to this installation for injecting aqueous solutions of calcium chloride.

Again, Wisconsin heavy-duty engine power *fits the job and the equipment* to the best possible advantage. The user is sure of unfailing dependability, low cost maintenance and heavy-duty HIGH TORQUE Performance...backed by *fast service* whenever needed.

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Houston NACE to Hold Corrosion 'Short Course'

The Houston Section of the National Association of Corrosion Engineers will hold its annual practical "Short Course for Pipeliners" Thursday and Friday January 23 and 24, 1958 at the University of Houston. As in previous years, the first day will be devoted to classroom instruction, with the second day including demonstrations and question and answer period.

The Houston Short Course is directed toward practical applications of corrosion control. Its main object is to reach people not directly involved in corrosion work such as foremen, electricians, etc. Classes will be limited to small groups with plenty of chance for questions and discussion.

The program for classroom instruction is as follows:

1. "Fundamentals of Corrosion"—C. L. Woody, United Gas Corporation.

2. "Underground Pipe Line Corrosion and the Fundamentals of Cathodic Protection"—M. A. Riordan, Rio Engineering Company.

3. "External Coating of Pipe Structures for Underground Service"—E. R. Allen, Humble Pipe Line Company.

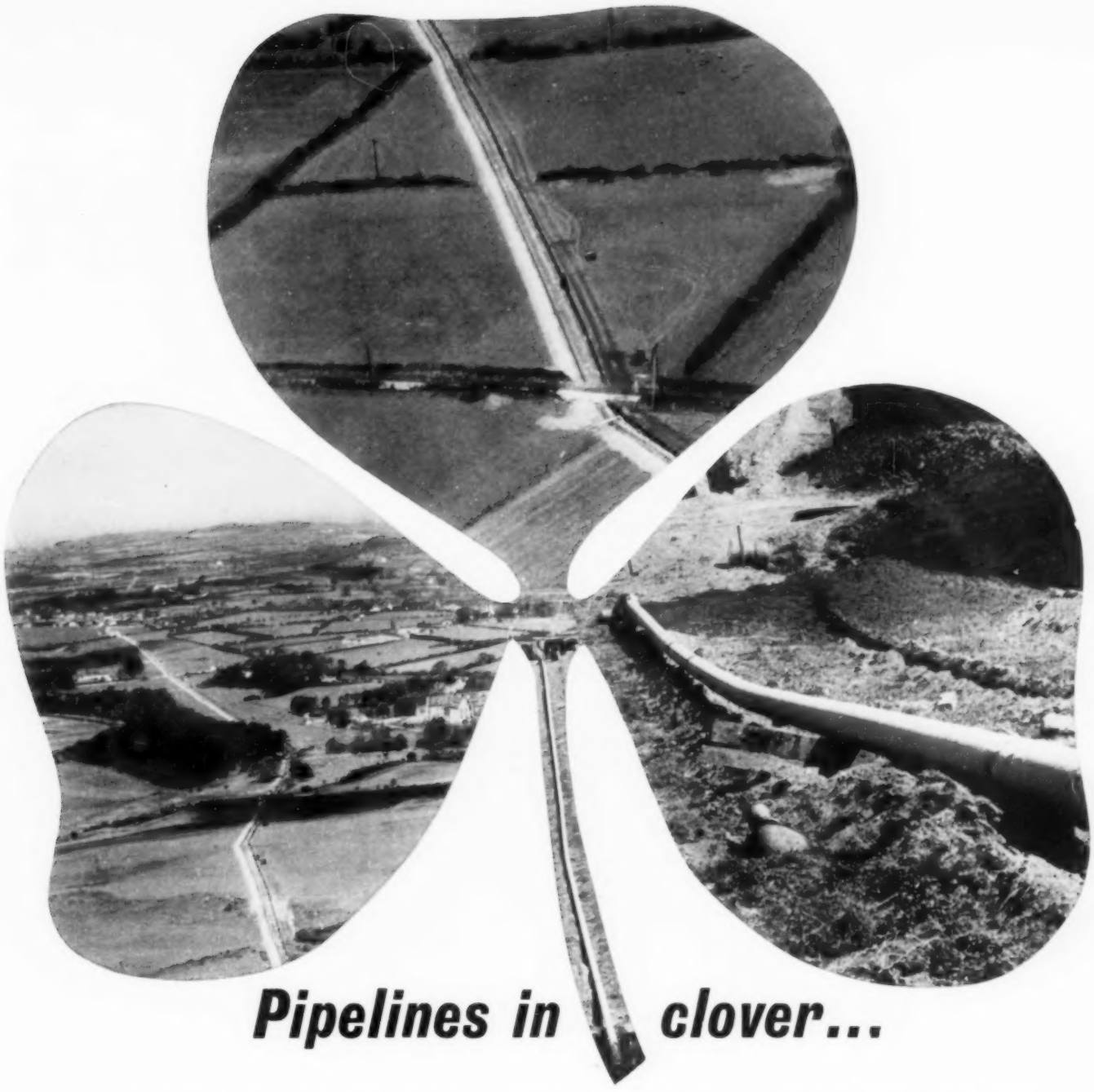
4. "Internal Corrosion of Pipe Lines and Methods for Control"—C. C. Nathan, Texas Company, and Ray Tuggle, Texas Pipe Line Company.

5. "Protective Coatings for Tanks and Above Ground Structures"—Joe Rench, Napko Corporation, and Frank Wilson, Clemtex, Inc.

6. "Design, Construction and Maintenance Planning for the Prevension and the Fundamentals of Cathodic Protection"—M. A. Riordan, Rio Engineering Company.

Comments of registrants at previous short courses have indicated that the course is very helpful to operating personnel. Inquiries concerning attendance should be directed to Walter Noser, Humble Pipe Line Company, Box 2220 Houston.

General chairman for the course is O. W. Wade, Transcontinental, with Noser serving as vice-chairman.



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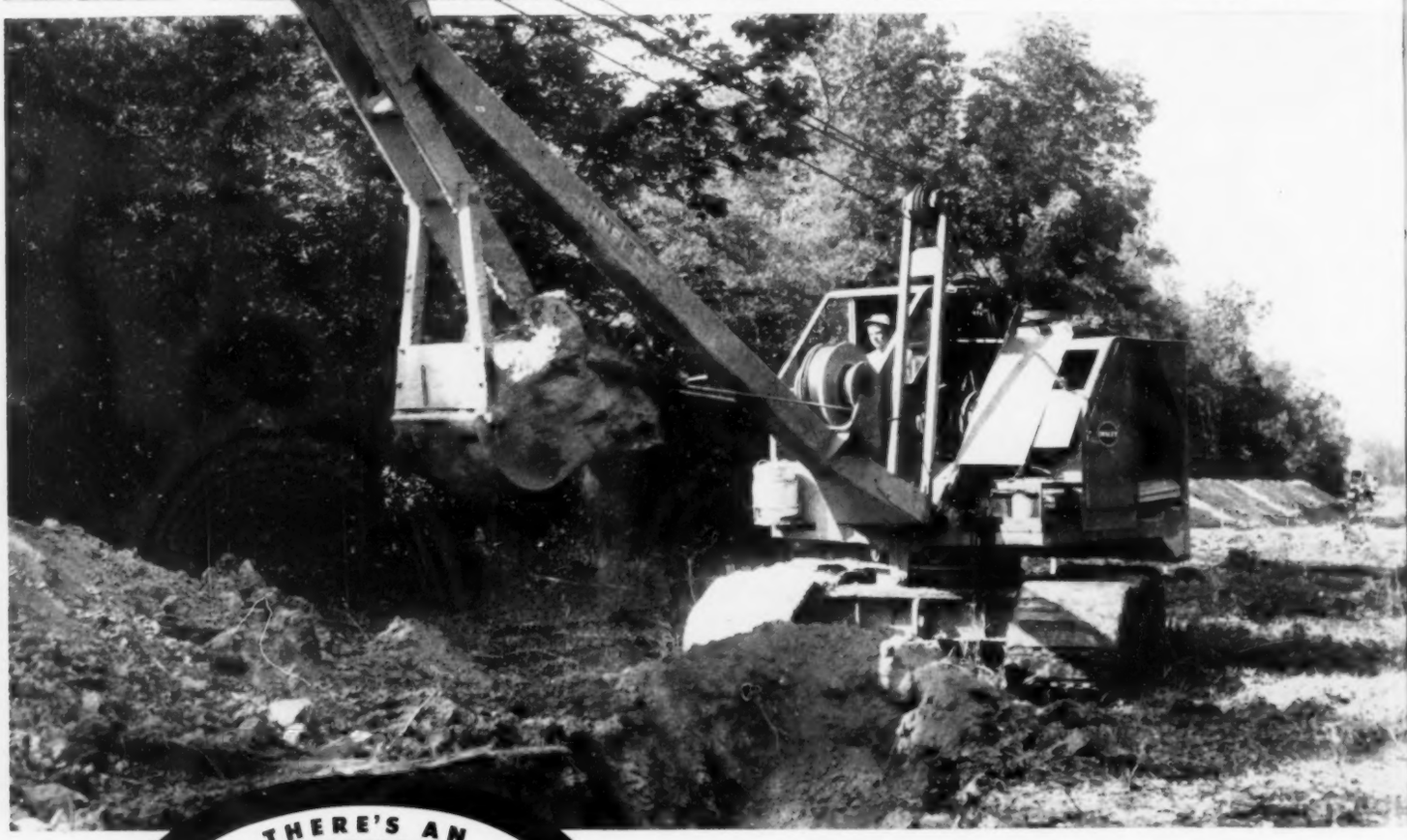

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Contract Awarded on Gas System in Lower Austria

Construction on a 160-mile gas pipe line system in lower Austria will begin soon.

Contracts have been awarded to William Brothers and John Brown Ltd. The line will be constructed for Niederoesterreich Gasvertriebs A. G. distributing firm. Pipe will range from 6 to 12 inches in diameter and the line will be completed by next fall.

The system will be used to transport gas from Brockfleiss and Schwechat, cities north and southeast of Vienna, respectively, to the Danube Basin above Vienna and such centers as St. Polten and Krems and area near Neustadt. The line will run as far as Semmering Pass near the boundary of lower Austria and Steiermark.

FPC Concludes Hearings on 'Little Inch' Pipe Line

Federal Power Commission hearings were concluded the latter part of December on Texas Eastern Transmission Corporation's proposal to retire a portion of its "Little Inch" pipe line from natural gas service and to construct substitute facilities to supply the service formerly rendered by that line.

The commission previously authorized the retirement of the Little Inch facilities in an opinion issued June 21, 1957, but the case was remanded November 1 by U. S. Court of Appeals for the District of Columbia Circuit on appeal by a group of intervening barge operators.

An abrupt end to the long controversy came when Texas Eastern attorneys accepted conditions proposed by the barge operators. This action should clear the way for an early decision by the FPC.

British Company to Build 60 Mile Crude Pipe Line

British Petroleum Company Ltd. of London will construct a 60-mile oil pipe line connecting the Llandardy Refinery to the company's deepwater tanker terminal presently under construction at Angle Bay.

Cost of renovating the terminal and building the pipe line is estimated at $18 million. The new line will have a capacity of 100,000 barrels per day.

Petroleum Chemicals, Nears Finish of Lake Charles-to-Orange Ethylene Line

Petroleum Chemicals, Inc., of New Orleans will soon complete construction on a pipe line to carry ethylene from Lake Charles, La., to Orange, Texas.

The line is made of 6⅝-inch pipe and will transport the chemical to E. I. du Pont de Nemours and Company, Inc. and the Spencer Chemical Company in Orange.

Completed construction includes a stretch of 30 miles across Louisiana farm and marshlands.

Ethylene will be placed in the pipe line at Lake Charles at a pressure of 1000 pounds per square inch and delivered at 450 psi. This permits the line to act as a storage and enables it to provide extra capacity for large deliveries.

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PROPOSED PIPE LINE CONSTRUCTION

Here in convenient summary form is Pipe Line Industry's listing of company, line size, length, service, location and project status.

U. S.

American Louisiana Pipe Line Co., Detroit, Mich., 12.2 miles, 12 and 16-inch, gas, lines and facilities to connect North Holly Beach Field and Second Bayou Field, Cameron Parish, La. with its existing facilities, $1.4 million, before FPC.

Cape Pipe Line Co., Philadelphia, 100 miles, Delaware Bay to the Philadelphia refining area, planned.

Chicago District Pipeline Company, 52 miles, 30-36 inch, gas, from Natural Gas' proposed line at Joliet to Chicago, $13 million, temporary FPC authorization.

Cities Service Gas Co., Oklahoma City, 116 miles, gas, facilities in Kansas and Oklahoma and pipe lines in Kansas, $11.4 million, authorized.

41 miles, 30-inch from Verdigris River to the Petrolia compressor station; 33 miles, 30-inch between the Petrolia and Walda compressor stations; 4 miles, 4-inch in Wilson County, Kansas, and 6 miles, 12-inch gas line in Reno County, Kansas, plus replacement of facilities in Kansas, $6.5 million, temporary FPC authorization.

Coastal States Gas Producing Co., Corpus Christi, Texas, 45-mile, gas gathering system in Bee County, Texas to connect with Texas Eastern's main pipe line, $1 million, planned.

Coastal Transmission Corp., Houston, 574 miles, 22-24 inch, gas, from McAllen, Texas to Baton Rouge, La. connection of Houston, Texas Gas and Oil plus 414 miles of laterals, $55 million, authorized.

Colorado Interstate Gas Co., Colorado Springs, 734 miles, 24-30 inch, gas, from Texas & Okla. Panhandle to Kit Carson, Colo., to Beatrice, Neb., plus four compressor stations, $87 million, temporary FPC authorization.

50 miles, 22 inch, gas, from Mocane area to existing system at Hooker, Okla., authorized.

Conn-Mass Pipe Line, Inc., 88 miles, 8 inch, products, from Boston to Springfield, Mass., planned.

133 miles, 16-inch, products, from Linden, N. J. to Hartford, Conn., planned.

62.2 miles, 8-inch, products, from New Haven, Conn. to Springfield, Mass., planned.

38 miles, 6-inch, products, from Waltham, Mass. to Fitchburg, Mass., planned.

Deep Rock Gas Co., Oklahoma City, 120 miles, 6-inch, LPG, from Tioga, N. D., to Canadian border, planned.

Derby Refining Co., 200 miles, 12 inch, crude, from Meade County, Kansas, to Wichita, Kansas, considered.

Eastern Shore Natural Gas Company, Salisbury, Md., 124 miles, 6 and 8-inch, gas facilities on eastern shore areas of Delaware and Maryland, $3 million, authorized.

El Paso Natural Gas Co., El Paso, 835 miles, 4-34 inch, gas, facilities in Texas, New Mexico and Arizona; 4 to 20-inch, gas, field lateral lines in Texas, New Mexico and Arizona, authorized. $162 million. Before FPC. 362 miles authorized and contracts let.

500 miles, 34-inch, gas, from Twin Falls, Idaho to California border near Las Vegas, Nev., planned.

18 miles, 12-inch, gas, loop between Good Field and East Vealmoor, Texas, temporary FPC authorization.

Emerald Pipe Line Corp., 120 miles, 6 inch, products, from Sunray, Texas, to Tucumcari, N. M., planned.

Equitable Gas Company, Pittsburgh, Penn., development of Rhodes natural gas storage pool in Lewis County, W. Va., and construction of 11.7 miles of storage pipe line and other facilities, $2,091,430, authorized.

Gillette Pipeline Co., Cheyenne, Wyo., 103 miles, crude, from Dead Horse Creek field to Casper, Wyo., planned.

Great Northern Railway, St. Paul, 400-600 miles, 12-20 inch, crude, from Williston Basin to St. Paul-Minneapolis and Duluth-Superior areas, considered.

Gulf Interstate Gas Co., Houston, 12.8 miles, 6 and 20 inch, gas, loop line in Louisiana, $730,000, temporary FPC authorization.

Harry Bass & Sons, Inc., Dallas, pipe line network from well heads to compressor stations to central gasoline plant plus line to railroad in Pembina field, Alberta, $17 million, approved.

Home Gas Co., Pittsburgh, Penn., gas facilities in New York, $3.8 million, authorized.

Humble Oil & Refining Co., 250 miles, 26 or 30 inch, gas, and 200 miles, main gathering system line of varying sizes, from southwest Texas to Houston, plus gas processing and cycling plant near Corpus Christi, $75 million, planned.

Humble Pipe Line Company, 90 miles, 16 inch, crude, from Hawley to Comyn, Texas, $3.5 million, planned.

Iron Ranges Natural Gas Co., 115 miles, gas, from Itasca and St. Louis counties along route of Mesabi range from Grand Rapids to Aurora, Minn., $5 million, before FPC.

Jayhawk Pipe Line Corp., Wichita, Kansas, 242 miles, 10 and 12 inch, crude, from western Meade County to Valley Center, Kansas, $8.6 million, planned.

Katy and New York Central Railroads, 2500-mile, 10-12 inch, LPG, from Houston, Texas, to New York, Considered.

Kerr-McGee Oil Industries, Inc., 24 miles, 4 inch, gas, to connect wells with its Breton Sound production island off the Louisiana coast, authorized.

Laurel Pipe Line Co., Philadelphia, 440 miles, 14-24 inch, products, from Philadelphia to Pittsburgh to Cleveland, $50 million, contract for Susquehanna River crossing let to Pipeline Maintenance and Construction Co., Inc.

Magna Pipeline Co., 40 miles, gas, underwater line from Anacortes, Wash., to Victoria, B. C., $6 million, planned.

Manufacturers Light and Heat Co., Pittsburgh, Penn., 13.8 miles, 10 and 12 inch, gas, facilities in Ohio and West Virginia, $757,300, authorized.

Michigan Gas Storage Co., Jackson, Mich., gas, facilities in central Michigan, $2 million, authorized.

Michigan-Wisconsin Pipe Line Co., Detroit, 472 miles, 4- 24-inch, gas, main line loops and extensions in Wisconsin, Illinois, $17.6 million, before FPC, temporary authorization for a part, 47.5 miles let to G. E. T. Construction, Inc.

148 miles, 4-20 inch, gas, line to connect new gas supplies in Laverne field, Northwestern Oklahoma, planned.

Midwestern Gas Transmission Co., Houston, 2067 miles, 3-24 inch, gas, from Emerson, Manitoba, to Nashville, Tenn., $103 million, before FPC.

Mookl Chemical & Gas Corp., Tulsa, and **Missouri Transmission Corp.**, Springfield, Mo., 425 miles, 16-inch, gas, from Oklahoma City to St. Louis, before FPC.

Natural Gas Pipe Line Co. of America, 416 miles, 36 inch, gas, loops at various points along existing line between Beatrice, Neb., and Joliet, Ill., $76.2 million, temporary FPC authorization.

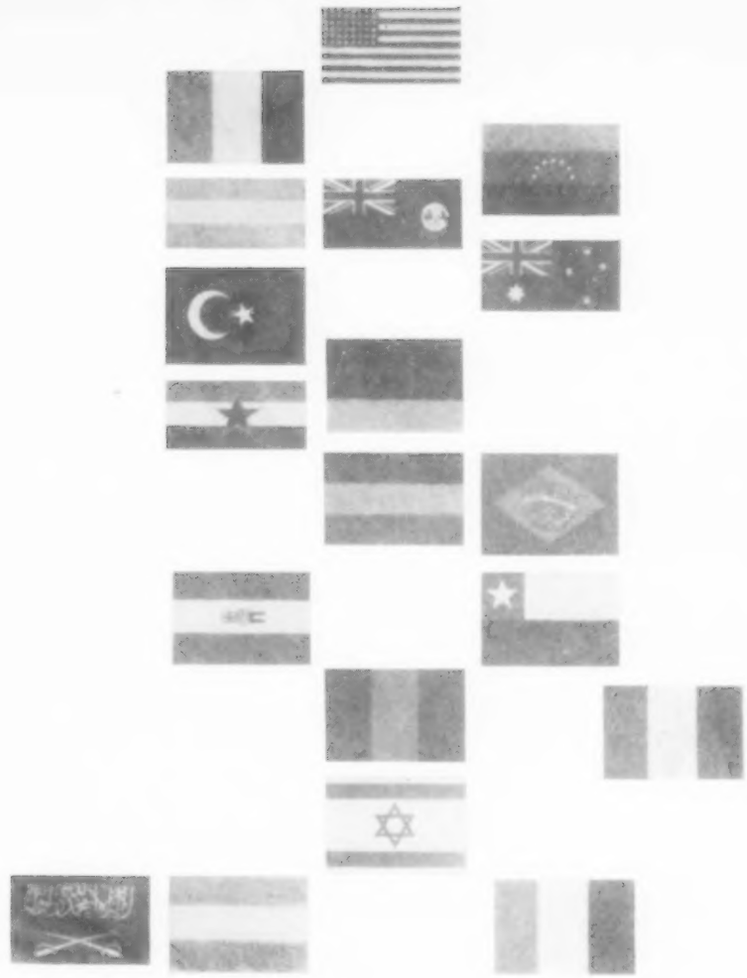
New York State Natural Gas Corp., Pittsburgh, Penn., gas, facilities in New York state, $1.2 million, authorized.

North Carolina Natural Gas Corp., 630 miles, 2-16 inch, from Transco's system near Mooresville across to southeastern North Carolina, authorized.

Northern Natural Gas Co., Omaha, 167 miles, 20 inch, gas, from Farmington, Minn. to Duluth, Minn., and Superior, Wis., $12 million, before FPC.

42 miles, 10 inch, gas, from Rochester, Minn. to Winona and Goodview, Minn., $963,000, before FPC.

365 miles, gas, new facilities in Minn., Iowa, S. D., Neb., Wis., plus 1090 miles of branch line and station facilities, $65.7 million, authorization for a part. Gas facilities in Texas, Oklahoma and Kansas, $6 million, before FPC.



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Northwest Pipeline Corp., Salt Lake City, 350 miles, 6-10 inch, crude, from Four Corners area to Salt Lake City, $15 million, considered.

Ohio Fuel Gas Co., Columbus, Ohio, 56 miles, 18-24 inch, gas, Richland County, Seneca County, Sandusky County to Toledo area, $4 million, contract for 22 miles awarded to H. L. Gentry Construction Co.

33 miles, 4 to 20 inch, various counties, Ohio, $1 million, authorized.

21.8 miles, 12 and 20-inch, natural gas facilities in various counties, Ohio, $1 million, authorized.

Ohio Oil Company, Findlay, Ohio, 350 miles, 12 inch, products, from Wood River, Ill. to Chicago, 84 miles let to Panama-Williams Corp.

Pacific Gas & Electric Co., 1,300 miles, gas, from Alberta, Canada to Antioch, Calif., $380 million, planned.

Pacific Lighting Gas Supply Co., 82 miles, 34-inch, gas, from North Coles Levee, south-central San Joaquin Valley to Newhall in Los Angeles County, Calif., $12 million, contract let to Engineers Limited Pipeline Co.

Pacific Northwest Pipe Line Corp., Salt Lake City, 1000 miles, gas, gathering system in San Juan Basin and sales laterals in Washington plus compressor facilities, $30 million, planned.

112 miles, gas, laterals, in Washington and Idaho, $4.5 million, authorized.

Facilities and horsepower additions, $5.7 million, temporary FPC authorization.

40 miles, gas, from Ute Trail fields in northeastern Utah to main line in western Colorado, $2 million, planned.

Panhandle Eastern Pipe Line Co., Kansas City, 33 miles, 16 inch, gas, Muncie, Ind., lateral, planned.

Pennsylvania Gas Co., Warren, Penn., 38 miles, 8 and 10 inch, gas, in Erie and Warren Counties, Penn., and Chautauqua County, N. Y., $2.6 million, authorized.

Permian Basin Pipeline Co., Omaha, Neb., 26.8 miles, 10 inch, gas, from a point on existing system in Pecos County, Texas, to a gasoline plant in Pecos County, Texas, $787,100, temporary FPC authorization.

Piedmont Gas Co., Hickory, N. C., 78 miles, 2-8 inch, gas, from connection with Transcontinental Gas Pipe Line to serve customers in North Carolina, $2.6 million, authorized.

Shell Pipe Line Corp., 100 miles, 18-20 inch, crude, from Shell's Southwest Pass terminal to Shell's Norco Refinery near New Orleans, $10 million, planned.

Sinclair Pipe Line Co., 149 miles, 20 inch, crude, from Teague to Houston, contracts let to Lone Star Pipe Line Constructors, Inc. and Golightly Construction Corp.

Southern Kansas Pipe Line Co., Inc., Arkansas City, Kansas, 200 miles, 6-10 inch, crude, southwestern Kansas to Arkansas City, Kansas, planned.

Southern Natural Gas Co., Birmingham, 69 miles, 24 inch loop, gas, along the east leg of the Louisiana supply system between Toca and Franklinton compressor stations; 67 miles, 26 inch loop, gas, from Franklinton to Gwinville, La., to bring gas from 12 fields on south Louisiana to main system at Gwinville, $37.5 million, before FPC.

Tennessee Gas Transmission Co., Houston, 632 miles, 24 and 30 inch, gas, from Louisiana delta to Portland, Tenn. and Coudersport, Pa. to Hamburg, N. Y., temporary FPC authorization.

264 miles loop lines in Tennessee, Kentucky, West Virginia and Pennsylvania, temporary FPC authorization.

Compressor stations in Mississippi, Tennessee, New York, Pennsylvania and additions in Tennessee, Kentucky, Ohio and Pennsylvania, $129 million, temporary FPC authorization.

Texas Eastern-Penn-Jersey Transmission Corp., Shreveport, La., 65 miles, gas, from Delmont, Penn., to Lambertville, N. J., before FPC.

24,000 compressor hp additions to existing stations, $4.4 million, temporary FPC authorization.

Texas Eastern Transmission Corp., Shreveport, La., 267 miles, 14-30 inch, gas, Louisiana, Mississippi, Pennsylvania and New Jersey, $50 million, before FPC. 59 miles, 30-inch, gas, loop additions to pipe line from Kosciusko, Miss. to Uniontown, Penn., $5.8 million, temporary FPC authorization.

96.5 miles, 30-inch, gas, from Kosciusko, Miss., to Uniontown, Penn.; 9.4 miles of supply laterals; a 10,250 hp compressor station, and 33,360 hp to existing compressor stations, $24.5 million, authorized.

Texas Eastern Transmission Corporation and Wilcox Trend Gathering System, Inc., gas, compressor stations, $4 million, authorized.

Texas Gas Gathering Corp., Shreveport, 36.6 miles, gas, gathering system in Rodney Field, Jefferson County, Miss. and from North and South Locust Ridge, Lake St. John Field in Tensas and Concordia parishes, La., $855,413, Before FPC.

Transcontinental Gas Pipeline Corp., Houston, 87 miles, 24 inch, and 56 miles, 6-10 inch, gas, gathering systems, Southeastern Louisiana, $14 million, before FPC.

202 miles, 36-inch, gas, loops, 106 miles, 30-inch, three new compressor stations totaling 24,084 hp, additions at five stations totaling 12,000 hp, 195 miles, 24 and 30-inch, gas, across Pennsylvania to Leidy Storage Field, purchase laterals of 8-20 inches in South Louisiana and offshore, and a new river crossing to serve New York. $126.8 million, before FPC.

Trans-Western Pipe Line Co., 800 miles, 30-inch, gas. Four Corners area to California, $200 million, planned.

Underground Storage & Exploration, Upper Darby, Penn., 394 miles, 12-inch LPG, from Moundsville, W. Va. to Newark, N. J., $9 million, approved.

95 miles, 6-8 inch, laterals to Mauch Chunk, Penn., and to Philadelphia, planned.

International

ACT Oils, Ltd., Montreal, 400 miles, crude, Dawson Creek, B. C., to Bella Coola, B. C., before B. C. government.

Alaska-Yukon Refiners and Distributors, Ltd., Edmonton, Alta., 150 miles, products, serving Alaska and Yukon territory, $3.5 million, planned.

Bituminous Oil Pipeline Co., Calgary, 250 miles, crude, from Athabasca tar sand plant in northeastern Alberta to Edmonton, before Alberta Oil and Gas Conservation Board.

British Petroleum Co., New York, 60 miles, crude, from deep water tanker terminal at Milford Haven, U. K. to Llandarcy Refinery, $18 million, planned.

Burmah Oil Co., Ltd., 850 miles, crude, 20 inch, from Nahorkatiya to Calcutta, India, planned.

Canada Southern Petroleums, Ltd., Calgary, 400 miles, crude, from Peace River region of northeast British Columbia to Bella-Coola, planned.

Cie. de Recherche et d'Exploration de Petrole au Sahara, 530 miles, 16 inch, crude, Edjele field in Algeria to a port on Libyan coast, planned.

Cie. Francaise de Petrole (Algerie) and **Ste. Nationale de Recherche et d'Exploitation des Petroles en Algerie (SN Repal)**, 300 miles, 24-inch, crude, from Hassi Messaoud field in Algerian desert to Bougie on Mediterranean Coast, contracts let to Entrepose Co. and Ste. Parisienne pour Industrie Electrique.

Consolidated Gathering Systems, Ltd., Calgary, 198 miles, crude, Sturgeon field to Edmonton, planned.

Cuban Gas Transmission Co., 650 miles, gas, from Campeche area of Mexico across Yucatan and under Gulf of Mexico to Havana, Cuba, 120 miles would be submarine, considered.

Development and Resources Corp., 70 miles, 8 inch, gas, from Agha Jari oil field to Ahwaz, Iran, planned.

East Coast Transmission Co. (Pacific Petroleums, Ltd., Home Oil, Ltd., Canadian Homestead Oil, Ltd. and Merrill Petroleums, Ltd.), crude, from Alberta to Toronto, planned.

Elburz Oil Corp., 1000 miles, big inch, crude, from Central Iran to Alexandretta, Turkey, $450 million, planned.

Entre Nazionali Idrocarburi, Rome, Italy, crude, from Qum field in Iran to the Mediterranean Sea, considered.

Hydrocarbons Pipeline, Ltd., Winnipeg, Manitoba, 880 miles, 6-8 inch, products, from Edmonton to Winnipeg, $35 million, partial authorization.

Iraq Joint Venture Pipe Line, 1200 miles, 38-40 inch, crude, from head of Persian Gulf through Iraq to Turkish coast of Mediterranean, $840 million, planned.

Iranian Consortium, 50 miles, 26-28 inch, crude, from Gach Saran field to proposed terminal near Bandar Mashur, planned.

22 miles, 16 inch, and 30 miles, 16

inch, crude, from Agha Jari field to Bandar Mashur, planned.

Mene Grande Oil Co., 42 miles, 16 inch, crude, from Ceuta field in Lake Maracaibo to Bachaquero terminal, $6 million, planned.

76 miles, 30 inch, from Oficiana to Puerto La Cruz, Venezuela, considered.

61 miles, 6 inch, LPG, from Anaco to Puerto La Cruz, Venezuela, considered.

National Iranian Oil Co., 146 miles, 6 inch, crude, from Azna to Isfahan, Iran, $5 million, planned.

1000 miles, 38 inch, crude, from central Iran to the Turkish Mediterranean coast, considered.

Niederoesterreich Gasvertriebs A. G., 160 miles, 6-12 inch, gas, from Brockfleiss and Schwechat to the Danube Basin and area near Newstadt in Lower Austria, contract let to Williams Brothers and John Brown, Ltd.

Northern Utilities Co., 35 miles, 16 inch, gas, in Fremont Natrona County, Wyo., area; 8 miles, 12 inch, around Casper; 6 miles, 8 inch, from Sand Draw gas field to Beaver Creek field; 12 miles, 6 inch, from Beaver Creek field to the system servicing the Riverton-Lander area, planned.

Northwestern Utilities, Ltd., Edmonton, 75 miles, 16-inch, gas, from Pembina field to Edmonton, $3.5 million, planned.

Petroargentina, Bahia Blanca, Argentina, 370 miles, 16 inch, crude, from Newguen to Bahia Blanca, Argentina, $40 million, planned.

Petroleos Mexicanos, 108 miles, 10 inch, gas, from Gral. Escobedo to Monclova to tie into Reynosa-Monterrey gas pipe line, $9 million, planned.

108 miles, 10 inch, gas, from Gral. Escobedo to Monclova to tie into Reynosa-Monterrey gas pipe line, $9 million, planned.

600 miles, 24 inch, gas, from Pemex City to Mexico City, $50 million, planned.

38 miles, 4 inch, products, from Mexico City of Toluca, $500,000, planned.

126 miles, 4, 6 and 8 inch, products, from Mexico City to Cuernavaca and Puebla, $2.5 million, planned.

Royal Dutch Shell Co., 155 miles, 24-30 inch, crude, from German Rhineland to mouth of Rhine River, planned.

Saharian Pipe Line Co. (subsidiary of Cie. Francaise des Petroles, Algerie), 100 miles, 6 to 10 inch, from Hassi Messaoud field to Touggourt, Algeria, planned.

Saskatchewan Power Corp., Regina, Sask., 80 miles, gas, Hatton gas field to Success, Sask., planned.

40 miles, gas, Moose Jaw to Regina, Sask., planned.

Stanmount Pipe Line Co., 140 miles, 10 inch, crude, Cayiga and Beaver Lake fields, N. D., to connect with Interprovincial Pipe Line, planned.

Sturgeon Pipe Line Co., 100 miles, 12-inch, Sturgeon Lake field to Trans-Mountain system, $6.5 million, planned.

Sui Gas Transmission Co., Multan, Punjab, India, 145 miles, 8-inch, gas, from

Joe Roughneck's solid source of supply...

API CASING | API TUBING | API LINE PIPE

Wheel of plenty! Welding pipe by electric resistance weld process. Lone Star API pipe is fully normalized.

Joe Roughneck, of course, is symbolic of the men who have made the fabulous oil and gas industry tick . . and Lone Star Steel's huge completely integrated plant is right in the middle of Joe's workshop. Lone Star pipe is quality-controlled from mining of ore to finished pipe. In addition to operating day and night to supply Joe's pipe needs . . Lone Star is building new and even larger facilities.

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J&L line pipe made by the electric resistance welding process is a quality product. It is particularly desirable, economical and efficient because of uniform wall thickness, roundness, weldability, ductility, and availability in long lengths.

Uniform wall and roundness make for fast lining up.

Long lengths minimize field welds and cut construction costs.

Weldability is excellent, and the pipe bends readily to any desired course.

Offered in sizes 5-9/16″ through 12-3/4″ from the J&L mill at Aliquippa, Pa.

Ask any J&L Supply man for further details.

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SUPPLY DIVISION – Tulsa

J&L – A GREAT NAME IN STEEL

42

Sylhet to Dacca, East Pakistan, $9 million, considered

83 miles, 10-inch, gas, from Rohri section headquarters of Sui-Karachi line to main Multan line on East bank of Indus in the Bhung vicinity, Pakistan, planned.

Trans-Canada Pipe Line, Ltd., Calgary, Alberta, 2294 miles, 20, 30, 34 inch, gas, from Alberta to eastern Canada, $378 million; 1342 miles completed; contracts let by Northern Ontario Pipe Line-Crown Corp. for an additional 367 miles; 491 miles to be laid in 1958 by Trans-Canada.

Trans-Europe Pipe Line, 700 miles, 30 inch, main trunk, crude, from Mediterranean to northern Europe, considered.

Trans-Mountain Oil Pipe Line Co., 100 miles, loops near Kamloops, B. C. and Edson, Alta. plus pump station, tank farm and three temporary stations, $40 million, 50 miles let to Dutton-Williams Bros.

Westcoast Transmission Company, Ltd., 174 miles, 30-inch, gas, Savanna Creek gas field, Alberta, to British Columbian border, planned. $45 million.

650 miles, crude, from Peace River area to Vancouver, $100 million, planned.

Winnipeg and Central Gas Co., Winnipeg, Mant., 450 miles, 4-8 inch, LPG, from Tioga, N. D. to Winnipeg, Canada, $20 million, planned.

Yacimientos Petroliferos Fiscales, Buenos Aires, Argentina, 621 miles, 12-inch, products, Mendoza to San Lorenzo, Argentina, $19 million, planned.

281 miles, 12¾ inch, crude, Pichanal to San Miguel Tucuman to Techint, S. A., planned.

Jayhawk to Build Crude Line in Western Kansas

A 242-mile, 10 and 12-inch crude pipe line to serve oil producing areas in western Kansas is to be built and operated by Jayhawk Pipe Line Corporation of Wichita, Kansas.

The line, to consist of 200 miles of 12-inch and 42 miles of 10-inch will begin in western Meade County and extend through Clark, Kiowa, Stafford, Rice and McPherson counties before swinging southward to Valley Center, Kansas.

Plans for the $8,650,000 line have been announced by National Cooperative Refinery Association and Colorado Oil and Gas Corporation. Pipe Line Technologists of Houston has the engineering contract for the line.

Initial capacity of the line will be between 15,000 and 20,000 barrels daily. Jayhawk will build and operate secondary gathering lines as needed to get daily volume and reserves as required, says J. W. Meehan, president of Jayhawk.

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How to do it

PIPE LINE HINTS

$10 is paid for each illustrated acceptable contribution. Mail to The Editor, PIPE LINE INDUSTRY, P. O. Box 2608, Houston 1, Texas

Scraps of Big Inch Pipe Used to Make Rugged Boat

Where it is necessary to work on river crossings or in swampy areas, a rugged boat can be made easily by taking a joint of scrapped big inch pipe and splitting it down the middle.

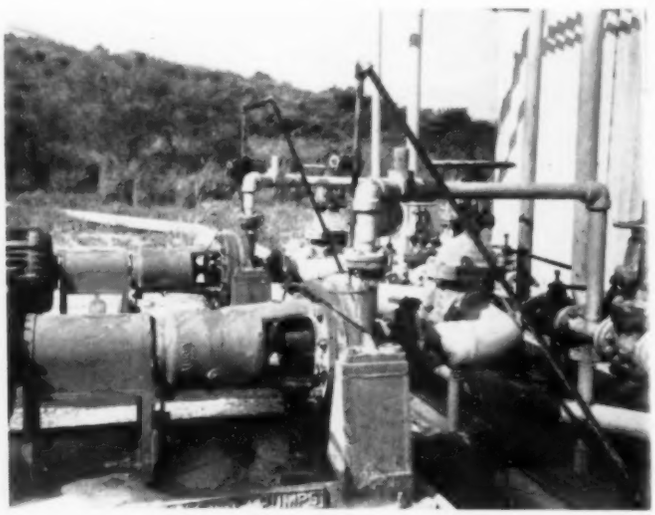
Before parting the two sections 45 degree cuts are made four feet from one end and a few inches from the other end. The four-foot pieces are then turned around and used to make the ends of the boat. A flat piece of metal is then welded over the bottom and loops welded in the front and back for easy towing.

The rig can be towed behind a launch on river bottoms or it may be pulled behind a tractor in swampy areas where it will float in water or slide easily over dry land.

Attach Trailer to Pick-up To Handle Small Pipe Jobs

A few joints of pipe or tubing can be hauled with a convenient trailer attached to a pick-up truck making it possible to handle many small jobs without having heavy equipment available.

When returning from the job the trailer can be hauled back on the bed of the truck. Equipped with a telescoping shaft, the trailer can be extended to the required length. For hauling back to the yard on the truck the shaft can be shortened allowing the trailer to fit on the bed of the pick-up. The small size and lightness of the trailer makes it easy to move into position by hand.

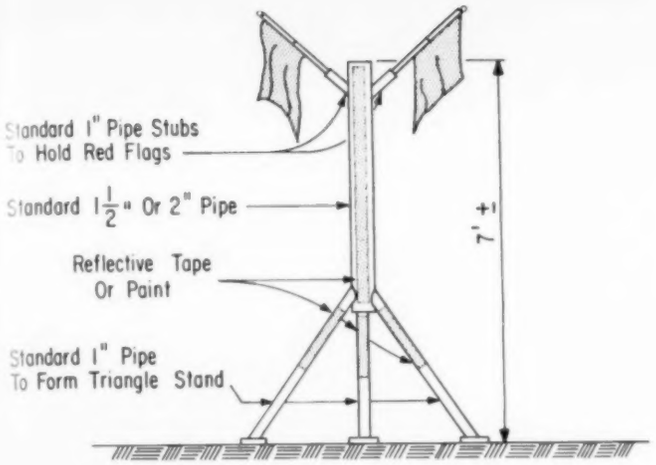


Water Pressure Prevents LPG Leakage at Pump Seals

More and more LPG is being handled by pipe lines. When equipment on hand is used for this purpose many problems develop. One very difficult problem has been preventing leakage around pump seals. Packing that will hold less volatile crude oil will not hold LPG.

One company solved this problem by maintaining water pressure on the outside of the pump seals equal to the pressure of the product being pumped. A jacket was placed around the bearing. Piping was connected to a pump and water source. The water pump maintained a water pressure on the outside of the seal to equal the LPG pressure.

Pump leakage can be tolerated when handling many liquids. This is not true with LPG or other highly volatile petroleum fluids. A leaky pump can present a definite safety hazard. This is one inexpensive way to be sure no product will leak in the pump area.

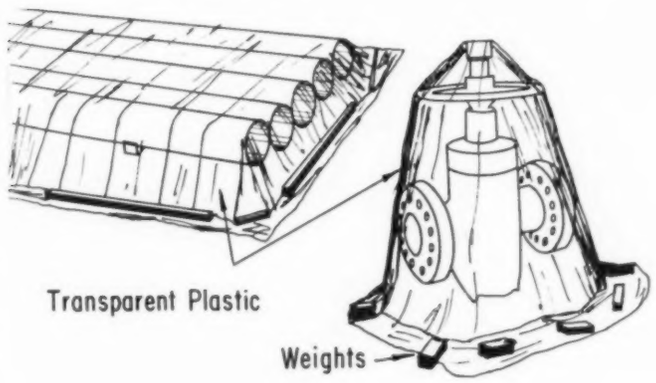


Portable Stand with Flags Offers Traffic Protection

At job sites on or near highways or heavily traveled roads, protection against possible careless drivers is a must.

A stand made for holding red flags can be used very conveniently at these locations. Its height makes it visible even if equipment or a motor vehicle is standing between it and oncoming traffic. It is also very useful for night jobs.

Completely portable and easily movable from one location to another, the stand can be fabricated economically, utilizing short pieces of pipe which are usually available.

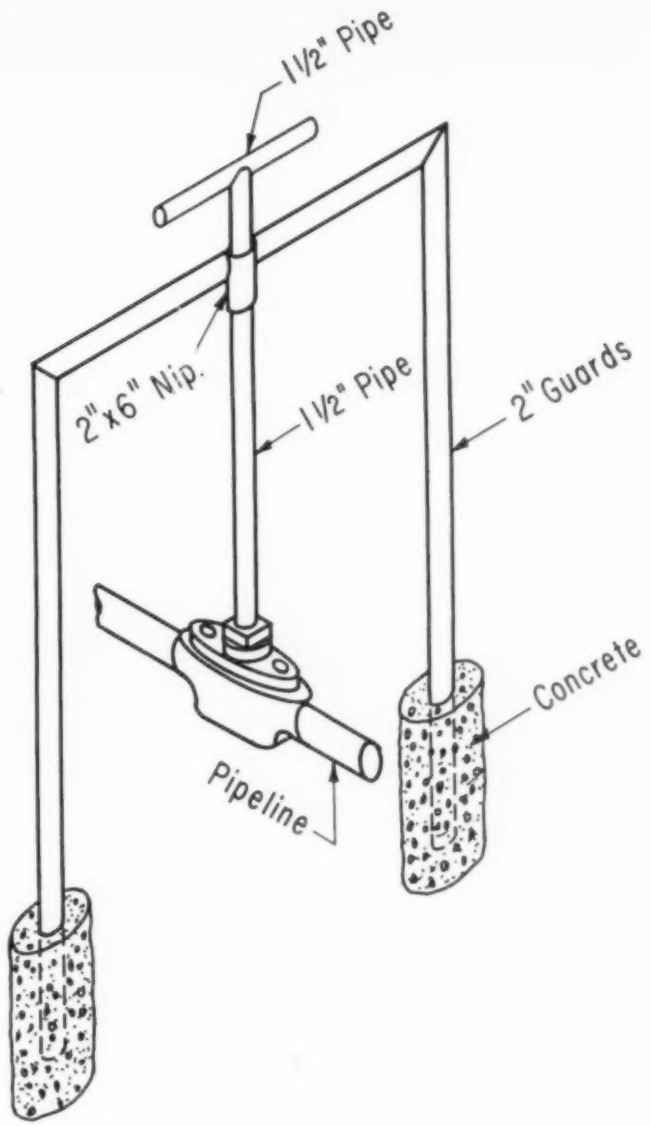


Plastic Sheets Protect Equipment from Weather

Equipment stored in a warehouse yard is at the mercy of the weather especially since much equipment is too bulky to be placed in a covered warehouse.

The material can be protected by a covering of inexpensive thin plastic sheets that can be cut to the desired size and secured with weights over the equipment.

The method can be used as a protection for small objects such as valves and fittings or to enclose racks of pipe. The plastic will last through many recoverings. Since the plastic is transparent, the equipment can be spotted easily when needed even though it is completely covered.



Long Handle Stems Ease Stop Cock Operations

Installation of permanent stems with long handles to stop cocks makes opening and closing easier and removes a safety hazard.

The stem is constructed of 1½-inch pipe. Cut to the desired length, a horizontal length of 1½-inch pipe is welded to the top of the stem. A guard which also adds rigidity to the stem is constructed of 2-inch pipe. A 2 by 6-inch nipple is welded in the center of the horizontal member of the guard and the 1½-inch stem is run through the nipple.

With this arrangement the stop cock can be opened and closed without having to stoop down, and since it is permanent there is little danger of damaging the stop cock due to a poor fitting tool being used to operate it.

Circuit Breaker Housing Makes Weatherproof Case

Where it is necessary to have a meter permanently installed in the open, a common circuit breaker housing makes an inexpensive weatherproof case for the meter.

In the example illustrated, the meter measures current being drained from a cathodic protection rectifier by another company. In this case, two pipe line companies are sharing a ground bed installation, and it is necessary to know how much current each pipe line is using. This handy meter and housing provide a convenient continuous current flow reading near the pipe line being served.

Tube on Drain Plug Keeps Piston Rod Submerged

A simple means of keeping a piston rod submerged in lubricating oil when corrosive fluids are being pumped can be devised by placing a large copper tubing on the drain plug connection.

The copper line is then looped over the cap of the high speed shaft on the side of the pump and returned to the collecting sump. Now when oil drips on the rod, it is under the lubricant instead of the rod being exposed to the air.

The feed glasses are filled each shift from the clear oil in the top of the sump and every week the oil is replaced and the sump cleaned.

FLEXIBLE

RUBEROID ROCK SHIELD

means extra safety in extra tough areas

Oil and gas pipelines need extra protection from rock abrasion and penetration in areas such as mountain cuts and river crossings. Ruberoid *Flexible* Pipeline Shield is the made-to-order extra protection to insure long, maintenance-free pipeline performance.

Ruberoid Pipeline Shield is made of premium felt, saturated with Bitumen and lined on one side with a tough kraft crepe paper to provide more flexibility. This rugged, durable covering will withstand extremes of abrasion and penetration and keep lines in service without costly repair interruptions.

Ruberoid Pipeline Shield is easy to apply right over the standard felt and enamel outer covering. It is available in 8′ to 10′2″ lengths . . . in widths from 17″ to 60″ to fit any size pipe. One or two man crews can install it quickly with 1″ metal strapping. Seals (600 per 1000′) are just as simple to install.

When laying pipelines in extra tough areas, add an extra margin of safety with Ruberoid Pipeline Shield. It will provide extra years of trouble-free service.

The RUBEROID Co.

Executive Offices: 500 Fifth Avenue, New York 36, N. Y.
Western Division Offices: 307 N. Michigan Ave., Chicago 1, Ill.

Portable Skidmounted Pump Connects Unit to Pipe Line

Where field pumping units are installed to handle crude from the producer's tanks, a simple hookup may be made by using a portable skidmounted pump with a removable cover for the power unit.

A concrete slab is poured near the line from the tank and the unit placed on it. The outlet from the tanks is connected into the suction

TI announces DATA GAGE*

Remote Liquid Level Measurement System

The DATA-GAGE is the direct product of Texas Instruments working closely with the engineers of a leading oil company. The result is the first transistorized automatic tank gauge that gives you *triple-check* reliability, dependable Power Float accuracy to 1/16 inch, low maintenance, operational simplicity, and 100-tank capacity in ONE LOW COST SYSTEM!

Eliminates Costly Errors—DATA-GAGE does not depend on alertness of operator to catch errors. System *automatically triple-checks* itself for accuracy before any data is displayed: 1. Operational check of Power Float; 2. Identification of tank connection; 3. Telemetering check for correctness and completeness of data.

Dependable Accuracy Under All Conditions—1/16 inch accuracy at depths of zero to 64 feet. No need to recalibrate over a wide range of liquids, temperatures and specific gravities. DATA-GAGE is the *only* system to give reliable readings during blending turbulence.

Low Initial and Long-range Cost—DATA-GAGE is a complete measurement system requiring no expensive extras. No special transmission system or conduits are required at installation—often existing ground level gauge connections and pipes can be utilized. Transistors are used instead of short-lived vacuum tubes. Easy access and quick-disconnect parts in all units make this the easiest to service of all systems.

Operational Simplicity—operator simply dials tank number and awaits data to be displayed seconds later on the exclusive DataFLASH reading panel. He need not make comparative readings to determine errors—DATA-GAGE automatically checks itself.

Power Float Reliability—the mechanical surface finder is a moving rather than static float, registers the instant surface tension is broken. No possibility of tilting, locking or sticking and giving an erroneous reading.

Proved Telemetering—true digital system employs digital code in binary decimal form. Means of transmission is a completely redundant (code group and its complement are transmitted), three-state code, the reliability of which has been thoroughly proved in transatlantic telegraphy.

Utmost Safety Precautions—field units are plug-in type which may be removed to safe area for servicing. No electric wires enter the tank. Explosion-proof housings are available on all field units.

For complete detailed information on the modern DATA-GAGE system, write for Bulletin No. M-601.

TEXAS INSTRUMENTS INCORPORATED

INDUSTRIAL INSTRUMENTATION DIVISION

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*TRADEMARK REGISTRATION APPLIED FOR.

of the pump, and a float chamber is used to remove entrained gas from the crude in case the tank goes empty while the pump is running.

The cover is made from a box of sheet steel which fits down over the engine. When the pump is not in use, the box is turned down over the unit.

Tool Box Aids Mechanic In Away-From-Shop Jobs

Many times a mechanic's work must be done away from the shop. Some of these jobs can be miles away from home. Many hours can be lost if the proper tools are not at hand.

This tool box will help the mechanic know he has everything he needs.

Being portable it can be loaded at the shop and placed on the pick-up before leaving. When work is to be done in the shop, the same tool box can be used. Sliding drawers make it easy to get to the tool needed without digging through a pile of other equipment. This feature also makes it easy to check and be sure everything that is needed is in place.

Swamp Buggy Pontoons Ease Ditching Problems

In swamp and marsh areas ditching is a difficult task. The ditching machine has to be pulled through the area and in some cases a road must be built.

Mounting the ditching machine on pontoons and pulling it with a "swamp buggy" enables ditching to progress regardless of the terrain.

T10 —a new and heavier
ALLEN MOBILE CRANE

Built to the same high standard as its smaller contemporary —the well-known model K—this new mobile crane/excavator will give the same long, trouble-free service, with a much bigger performance.

Designed and built at Cowley, the six-wheeled chassis is powered by a Gardner 5 L.W. oil engine, giving 94 b.h.p. at 1,700 r.p.m.

There is a separate power unit (Gardner 4 L.W.) for turntable

Using the standard lattice boom the T.10 can be equipped for grab, dragline or crane work.

Please write for full particulars.

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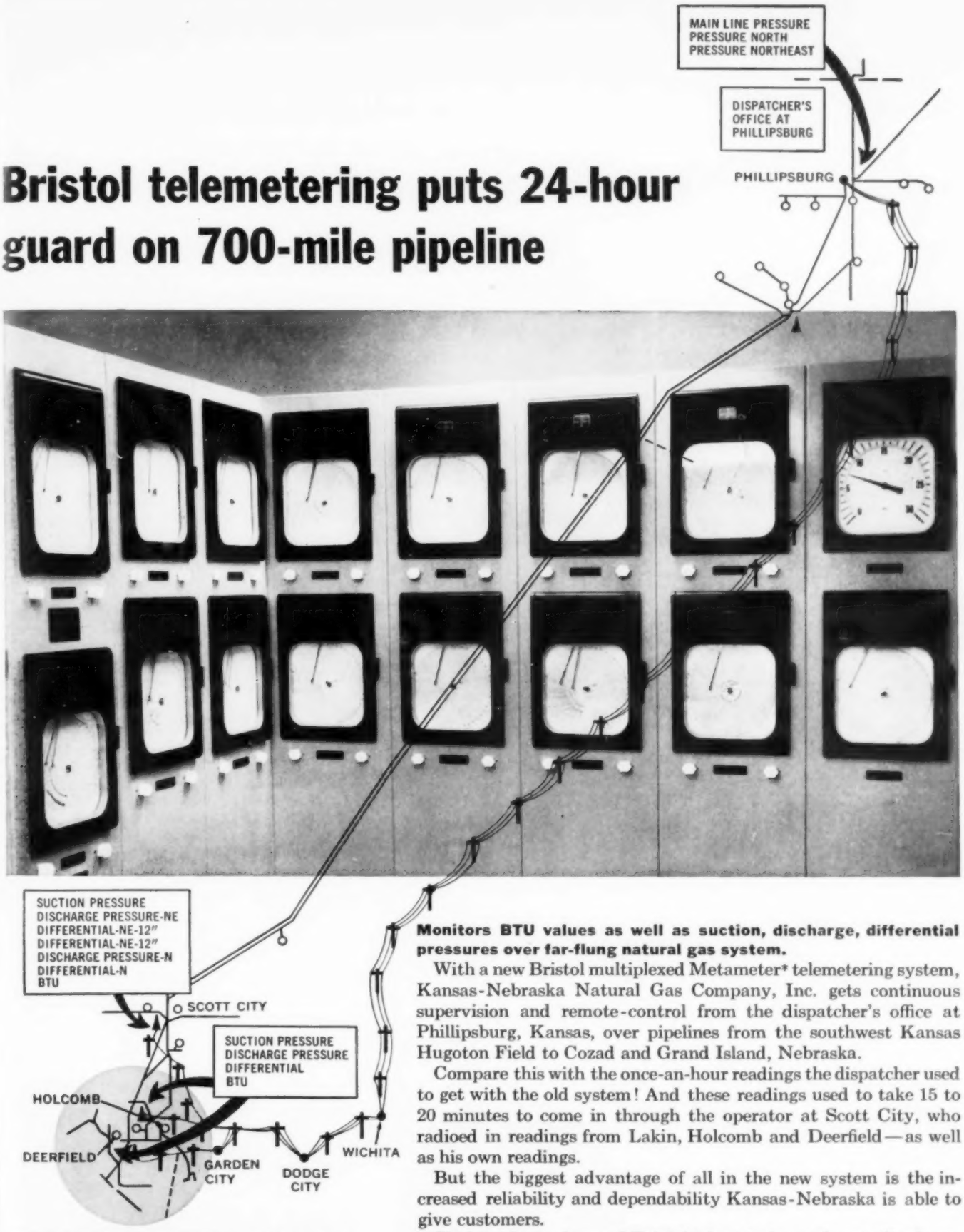
Bristol telemetering puts 24-hour guard on 700-mile pipeline



BRISTOL METAMETER* RECEIVERS (*photo, above*) at Kansas-Nebraska Natural Gas Company's Phillipsburg, Kansas, office give gas dispatcher complete data from field and compressor stations miles away—including suction, discharge, differential pressures and BTU values. Map shows telemetering system from southwest Kansas field to Phillipsburg. Pipelines serve Cozad and Grand Island, Nebraska (not shown).

Monitors BTU values as well as suction, discharge, differential pressures over far-flung natural gas system.

With a new Bristol multiplexed Metameter* telemetering system, Kansas-Nebraska Natural Gas Company, Inc. gets continuous supervision and remote-control from the dispatcher's office at Phillipsburg, Kansas, over pipelines from the southwest Kansas Hugoton Field to Cozad and Grand Island, Nebraska.

Compare this with the once-an-hour readings the dispatcher used to get with the old system! And these readings used to take 15 to 20 minutes to come in through the operator at Scott City, who radioed in readings from Lakin, Holcomb and Deerfield—as well as his own readings.

But the biggest advantage of all in the new system is the increased reliability and dependability Kansas-Nebraska is able to give customers.

Find out how advanced Bristol telemetering and centralized control systems can step up service and reduce costs on your pipeline. Write: The Bristol Company, 114 Bristol Rd., Waterbury 20, Conn.

*T. M. Reg U.S. Pat. Off.

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SADDLES: Conventional, and for pressure vessel heads. Nozzle sizes from ¼" to 24". Fleet-Line saddles weld neatly into place in much less time, and with much less welding rod.

Complete encirclement saddles.

Fast interested service. Write for Literature.

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What's Happening among MEN in the INDUSTRY

J. L. Guyot, general manager of **Entrepose Company** of Paris, France, inspected pipe line construction jobs in progress in the U. S. after attending API convention in November.

J. L. Guyot

An official from one of France's leading pipe line contractors, Guyot spent several days visiting the Tulsa headquarters of M. J. Crose Manufacturing Company, Inc., during his tour of equipment manufacturing.

•

Russell M. Riggins, president of **Texas Gas Corporation** of Houston, is a new member of the 25-Year Club of the Petroleum Industry.

The organization is limited to 300 active members throughout the world and meets annually at the time of the American Petroleum Institute convention. Riggins attended his first meeting of the club November 12 in Chicago.

•

R. V. Lahr is the new field manager at **Shell Pipe Line's** recently opened office in New Orleans from which operations of Shell's Delta crude line will be directed.

Other personnel assigned to the office are **C. L. Jarrett**, chief inspector; **W. A. Haley**, accounting supervisor; **H. E. Thomas**, project materialman; and Janet Weston, stenographer.

•

L. C. Poindexter is the new chief engineer of the Eastern division of **United Gas Pipe Line Company. C. W. Hollenshead**, formerly an engineer in the General office Pipe Line department, replaces Poindexter as general pipe line superintendent.

Poindexter, a member of the board of directors of United Gas and a 29-year employe of the company, began with a predecessor organization as draftsman at Bastrop, La., in 1929.

Hollenshead started his career as a draftsman with United Gas in the Shreveport district Engineering department in 1935.

•

R. L. Morton of Oklahoma City has retired as vice president and director of **Cities Service Gas Company** after 37 years with the firm.

R. L. Morton

Morton began his career with Cities Service by becoming assistant to the vice president and treasurer of the Empire Companies in 1920 at Bartlesville, Okla. He became assistant treasurer in 1924 and treasurer in 1928. He was in charge of financial planning and negotiations through the early 1930's, becoming vice president of the Indian Territory Illuminating Oil Company in 1935. With the merger of ITIO and Cities Service, Morton became vice president of Cities Service Oil Company in 1941. Three years later he was named vice president and treasurer of Cities Service Gas Company.

•

T. C. Johnson has been promoted to group supervisor of construction in the Engineering section of **Sohio Pipe Line Company** in St. Louis, Mo. He has been with Sohio since 1948.

Taking Johnson's place is **Walter Ir-**

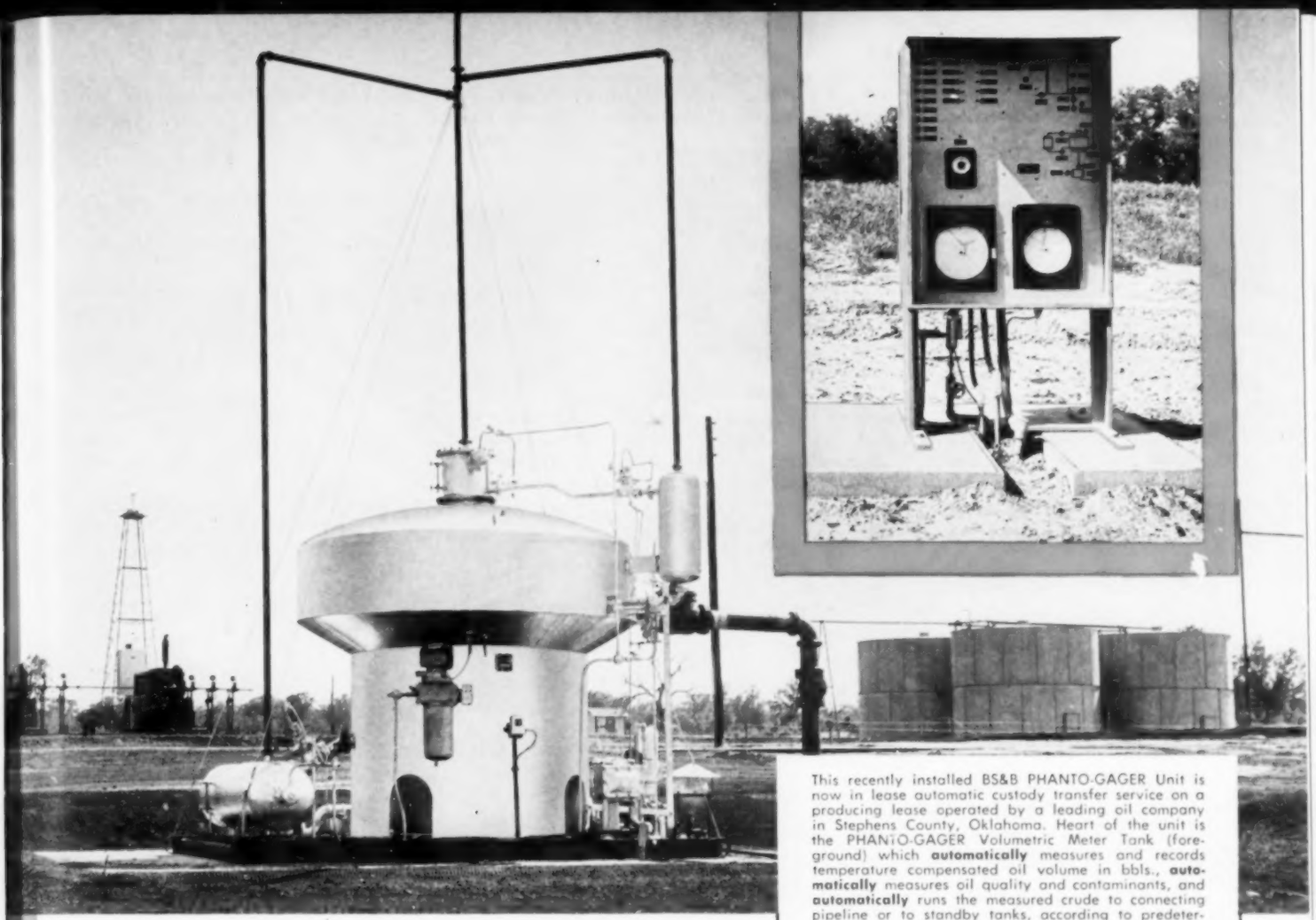
Laco

pipeline contractors

Incorporated

•

Houston, Texas



This recently installed BS&B PHANTO-GAGER Unit is now in lease automatic custody transfer service on a producing lease operated by a leading oil company in Stephens County, Oklahoma. Heart of the unit is the PHANTO-GAGER Volumetric Meter Tank (foreground) which **automatically** measures and records temperature compensated oil volume in bbls., **automatically** measures oil quality and contaminants, and **automatically** runs the measured crude to connecting pipeline or to standby tanks, according to predetermined schedules. The unit has been checked and fully approved by the pipeline company serving the area.

A Leading Oil Company Selects

BS&B *Phanto-Gager*

For Lease Automatic Custody Transfer

BS&B PHANTO-GAGER Units are offered for lease automatic custody transfer service in various sizes as skid-mounted assemblies, and with single or multiple metering and surge tanks. Fail-safe controls insure that no oil will be lost in case of power failure because:

1. The fill and empty valves on the meter tank are electrically interlocked.
2. Oil cannot be introduced into the meter tank after the measuring cycle has started, nor can oil be removed from the meter tank (other than to the pipeline) after the top gage has been made and before the run is completed.
3. All electrical controls, motors, instruments and wiring within 150 ft. of the meter and surge tanks are explosion proof.

The BS&B PHANTO-GAGER and the BS&B PHANTO-PUMPER, when used together, make up the complete BS&B PHANTO-MATIC Lease System which provides *full lease automation* from the wellhead to the pipeline. For full information, contact your nearby BS&B Man, or write to...

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OVER 60 YEARS
BS&B
RELIABILITY
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Oilfield Equipment Division, Dept. 1-EP1

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win, who is the new Norris city area supervisor. Irwin joined Sohio in 1944 as an engineer.

James Goodwin replaces Irwin as safety engineer with headquarters in St. Louis. He has worked for Sohio since 1953.

•

Reginald James S. Pigott, consulting engineer of Pittsburgh, Penn., received the Elliott Cresson Medal of The Franklin Institute at the annual medal day ceremonies held in October.

Pigott was selected for the award on the basis of his engineering accomplishments.

He was director of engineering research of the **Gulf Research and Development Company** for 23 years.

Mills Cox is the new executive vice president of **Transwestern Pipeline Company,** recently organized gas transmission corporation to headquarter in Houston.

Mills Cox

Cox was vice president of **Texas Eastern Transmission Corporation** of Houston prior to his affiliation with Transwestern.

Transwestern was organized by **Monterey Oil Company** of Los Angeles, **Warren Petroleum Corporation** of Tulsa and **J. R. Butler** of Houston to construct a gas pipe line from the Four Corners area to California.

•

Walter H. Helmerich is a new member of the executive committee of the International Petroleum Exposition to be held in May, 1959.

Helmerich is president of **White Eagle Oil Company** and **Helmerich and Payne,** drilling contractor subsidiary.

He organized Helmerich and Payne in 1920.

•

Jess E. Hendricks, former manager of Gas, Gasoline and Refining departments for **H. L. Hunt** oil and gas operators, has joined the executive staff of **Coastal States Gas Company** as manager of operations.

Hendricks will be in charge of Coastal States' oil and gas production activities and gas gathering systems.

•

Joseph D. Harnett, transportation vice president of **Standard Oil Company,** is the new assistant to **Clyde T. Foster,** president of the company, and continues as a vice-president of the firm.

Henry W. Pattison, general superintendent of transportation operations, is the new manager of the Transportation department and will be responsible for the crude oil and petroleum product transportation activities of the company.

Harnett has been with Standard Oil for 16 years, and Pattison joined the company in 1946.

•

Arthur E. Dietert has recently been appointed **Cities Service Oil Company** representative on the **CATC** management committee with headquarters in Houston. Dietert joined Cities Service as a scout in 1929 and has held various positions in the Geological division.

Cities Service also announces the transfer of **Sam W. Franklin,** former district landman in Olney, Ill., to the district landman position in Lafayette, La. Franklin succeeds **Hawley M. Kilpatrick** who has been transferred from Lafayette to Casper, Wyo., as district landman. Replacing Franklin as district landman in Olney is **William V. L. Nations,** who has been company landman in Houston.

DEATHS

Frank E. Richardson, pipe line and oil refinery consulting engineer died December 3 in Shreveport, La. At the time of his death Richardson was associated with Brown & Root, Inc. Since 1947 he had been assigned to Texas Eastern Transmission Corporation as a project engineer.

During his engineering career Richardson had also been affiliated with Great Lakes Pipe Line Company and The Pan American Companies. During World War II Richardson participated in the design of the "Big Inch" and the "Little Inch" pipe lines with War Emergency Pipe Lines Inc.

For precise pneumatic control operation . . .

Come to Kemp

Put an end to pneumatic control stoppages due to freezing, corrosion, and vapor locks. Install famous Kemp Oriad Dryers on your air lines to remove moisture and dirt. . .keep controls and delicate instruments operating smoothly and accurately.

Kemp Oriad Dryers on your lines cost surprisingly little. . . upkeep and maintenance costs are negligible. Rugged Kemp design keeps dryers operating perfectly, year after year.

Call your Kemp Representative or write us direct for Bulletins D-102 and D-103. The C. M. Kemp Mfg. Co., 405 E. Oliver St., Baltimore 2, Md.

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OF BALTIMORE

Available in all sizes for automatic, semi-automatic, or manual operation. Steam or electric reactivation.

Natural Gas Pipeline Company of America Finds GAS LINE LIKE NEW AFTER 27 YEARS!

Bitumastic coal-tar enameled pipe to be re-used

In relocating its line to make way for a new highway near Truro, Iowa, the Natural Gas Pipeline Company of America removed some 900 feet of Bitumastic® enameled pipe laid in 1930. According to Mr. D. C. Allen, District Superintendent, this 24-inch seamless steel tubing is in such good condition that it will be reconditioned and used again as new pipe.

Applied by the rolling and "granny-rag" method in 1930, the Bitumastic XXH Enamel on this line was in excellent condition. The asbestos-felt overwrap, originally applied loose, was torn from soil stresses, but the Bitumastic enamel coating showed no serious disbonding or deterioration. At the time of relocation, the section had been under cathodic protection for two years. Natural Gas Pipeline Company of America records show no corrosion leaks on this section during the entire 27-year period underground.

Case histories such as this prove the unmatched protective ability of coal-tar enamel. In these days of rising material costs, you can't afford to gamble your entire pipeline investment on a less effective coating.

Your Koppers representative will be glad to give you full information on Bitumastic coal-tar enamels Koppers Company, Inc., Tar Products Division, Pittsburgh 19, Pa. District Offices: Boston, Chicago, Los Angeles, New York, and Woodward, Alabama. In Canada: Koppers Products, Ltd., Toronto and Edmonton.

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BITUMASTIC
REG. U. S. PAT. OFF.
PROTECTIVE COATINGS

with the nation's finest automatic pipe coating and wrapping service

The South's own . . . and the nation's finest *automatic* pipe coating and wrapping plant is now in full operation in Atlanta (where the Georgia air is ideal for quality pipe coating). Better service, exceptionally qualified personnel and our modern 17-acre facility—part of which is shown above—assure pipe that is perfect when it goes in the ditch. Our special modern grit blasting cleans the pipe more quickly and evenly, permitting a smooth, even coating of primer, enamel and wrapping. We can store your bare pipe in our yard if you wish. And our own trucks will deliver anywhere in the South—with ditch-side service if you want—assuring damage-free handling—or we will ship by barge, rail or any combination. Ask about our rail in-transit rates. Complete facilities—full privileges. Call Southern now—for service "plus" . . . quality, dependability, immediate shipments.

For illustrated catalog and specifications chart, or a quotation—call, wire or write

Southern Pipe Coating Company

PHONE TRinity 5-0151 • 795 PEACHTREE STREET, N. E. • ATLANTA 8, GEORGIA

WHO'S MEETING WHERE

January

Kansas Oil Men's Association, 43rd annual convention, Lassen Hotel, Wichita, Kansas, Jan. 12-14.

Tenth Annual Pipe Line Contractors Association Convention, Boca Raton Hotel and Club, Boca Raton, Fla., Jan. 19-22.

NACE Houston section practical short course for Pipe Liners, University of Houston, Houston, Texas, Jan. 23-24.

Seventh Annual Instrument Short Course, co-sponsored by Southern California Meter Association and the Los Angeles Harbor Junior College, Jan. 30-31.

Natural Gasoline Association of America, regional meeting, Skirvin Hotel, Oklahoma City, Okla., Jan. 31.

February

ISA Chemical and Petroleum Industry Symposium on "Progress and Trends in Chemical and Petroleum Instrumentation," Hotel DuPont, Wilmington, Dela., Feb. 3-4.

American Society for Testing Materials, committee week, Hotel Statler, St. Louis, Mo., Feb. 10-14.

National Association of Corrosion Engineers, short course for pipe liners, Mayo Hotel, Tulsa, Okla., Feb. 12-14.

Pipe Line Contractors Association of Canada, Fourth Annual Convention, Empress Hotel, Victoria, B. C., Feb. 20-22.

ASCE, pipe line division, Sherman Hotel, Chicago, Ill., Feb. 24-26.

Natural Gasoline Association of America, Permian basin regional meeting, Lincoln Hotel, Odessa, Texas, Feb. 28.

March

American Society of Mechanical Engineers, Gas Turbine Power Division, Shoreham Hotel, Washington, D. C., March 3-6.

Petroleum & Chemical Industries short course on gas conditioning, University of Oklahoma, Norman, Okla., March 5-6.

Ohio Oil and Gas Association, winter meeting, Deshler Hilton Hotel, Columbus, Ohio, March 7.

NACE Annual Conference, Civic Auditorium, San Francisco, Calif., March 17-21.

New England Gas Association annual meeting, Hotel Statler, Boston, Mass., March 20-21.

American Congress on Surveying and Mapping & American Society of Photogrammetry, consecutive meetings and coexhibit, Shoreham Hotel, Washington D. C., March 23-29.

Midwest Gas Association, Broadmoor Hotel, Colorado Springs, Colo., March 24-26.

Oklahoma Utilities Association, Annual Convention, Biltmore Hotel, Oklahoma City, Okla., March 27-28.

American Petroleum Institute, Annual Pipe Line Conference, Jung Hotel, New Orleans, La., March 31-April 2.

April

Fifth Annual Conference on Corrosion Control, sponsored by University of Oklahoma, Extension Study Center, Norman, Okla., April 1-3.

NOW *a Modern Fittings Package*

one more reason for specifying
W-S FORGED STEEL FITTINGS

W-S Forged Steel Fittings are now being shipped in strong, lightweight fiberboard cartons designed to make purchasing a pleasure. Shipments are made up of unit cartons packaged inside a larger reinforced carton. It's easy... and advantageous to order your fittings in packaged quantities.

Here are additional advantages of the new W-S package:

1. Compact and easy to handle.
2. Ideal for neat, efficient stacking on warehouse and stockroom shelves.
3. Sealed against dust and moisture.
4. Contents clearly marked on outside face of each carton, readily visible for prompt identification.

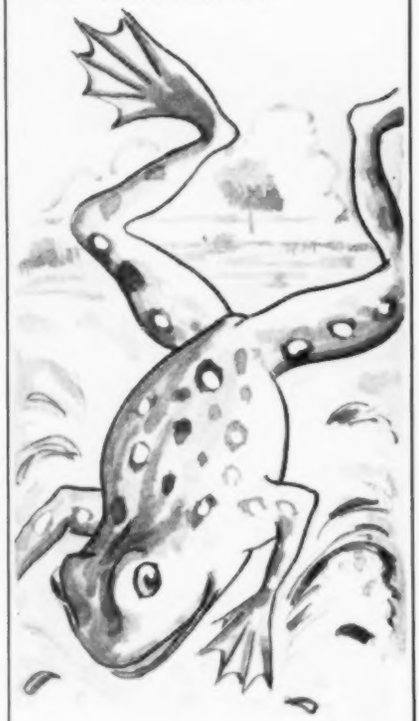
The new W-S package is only one of many reasons why W-S Forged Steel Fittings are the most widely accepted by industry.

Don't forget, too, W-S carbon steel fittings have the additional protection of their new blue synthetic coating. For detailed information on packaged lots ...and for a copy of our new fittings catalog, write today to W-S Fittings Division, H. K. Porter Company, Inc., Roselle, N.J.

Sold Through Leading Distributors

H. K. PORTER COMPANY, INC.
W-S FITTINGS DIVISION

YOU'RE THE
BIG
FROG
IN OUR POND!



It's better to be a BIG frog in a little pond than a LITTLE frog in a big pond.

We have no *unimportant* customers, whose orders stand by while bigger accounts get service preference. Yet we're big enough to handle any job.

Do business where *your* business is important. For pipe, casing, pipeline supplies, pontoons, piling, field welding . . . call on KANE . . . and get "big frog" attention — every time.

PIPE for every purpose

Convenient location for prompt delivery in the Gulf, or to any major oilfield.

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What's Happening among SERVICE and SUPPLY MEN

H. H. Herr, Jr.

A. W. Byxbee

Raybestos-Manhattan Makes Two Management Promotions

Arthur W. Byxbee, former sales manager of the Plastic Products division of Raybestos-Manhattan, Inc., of Manheim, Penn., has been promoted to general manager of the firm's recently acquired plant at Paramount, Calif.

Byxbee has been with Raybestos-Manhattan since 1938 and has been associated with the Plastic Products division since it started in 1952.

Succeeding Byxbee as sales manager of the Plastic Products division at Manheim, Penn. is Howard H. Herr, Jr. who has been with the company since 1946. Most recently he has been Central Atlantic district manager.

Alco Products Announces Five New Appointments

Alco Products, Inc., has recently made five administrative and management promotions. The men and their new posts are Herman Press, vice president of finance; John M. Howard, Jr., general manager of the Spring and Forge division; Marshall D. Raymond, marketing manager; Robert W. Pittman, central regional manager, and E. J. Brown, Pacific region manager.

Press joined Alco in 1929 as assistant to the president. Howard has worked for the company since 1920 when he joined the plant engineering office at Latrobe. Raymond started to work with Alco in 1923 as a special apprentice in Schenectady, N. Y. Pittman has been associated with Alco since 1947 when he joined the Chicago office as a sales representative. Brown has served Alco since 1935.

Overseas Projects Organization Sets Up Office in New York City

Herbert U. Ross is president and C. Foster is secretary-treasurer of Overseas Americans, Inc., newly formed organization of construction and engineering workers employed and interested only in overseas projects.

The firm will act as a clearing house for collecting, analyzing and exchanging information concerning foreign construction and engineering projects under construction or proposed. Headquarters are located at 7 West 44th Street, New York.

Thigpen Is New Sales Manager At Herb J. Hawthorne, Inc.

New sales manager at Herb J. Hawthorne, Inc., of Houston is Jack W. Thigpen, former administrative assistant.

Thigpen joined the firm in 1955. His appointment is part of a current expansion program to enlarge the company's Houston headquarters and product research division.

Tube Turns Announces Changes In Personnel at Company Posts

S. Merle Hardison is the new district manager in Philadelphia for Tube Turns, a division of National Cylinder Gas Company.

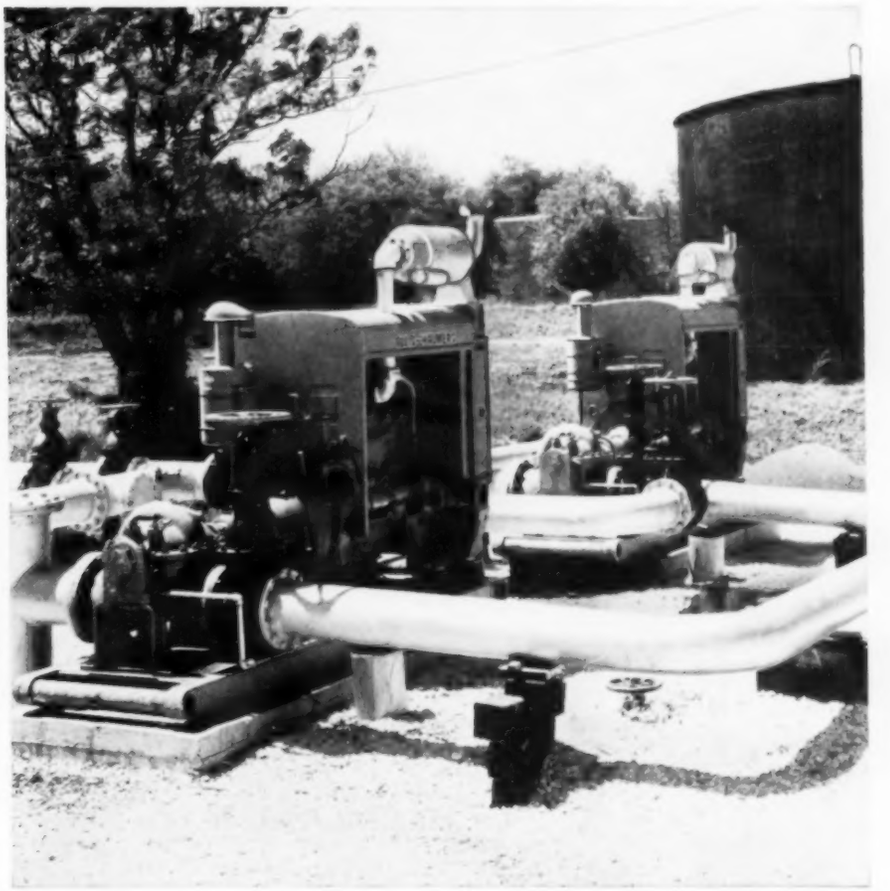
Hardison has been with Tube Turns for

NOTICE: Specify PELCO Welding Saddles

No change except the corporate name. We still have the same ownership, same management, same address, same telephone, and use the same 45 years of experience to render the same service under the same trade name—"PELCO."

PELICAN SUPPLY CO. INC.
P. O. Drawer 1108 Shreveport (84), La.
SEE YOUR NEAREST SUPPLY HOUSE

These two Allis-Chalmers 6DA 779 engines pump crude oil from storage tanks into tankers for the American Liberty Marketing Co., New Orleans, at the Westwago terminal.



3 BIG reasons why you should use Allis-Chalmers Engines

They work day in, day out — season after season. Simplicity is a keynote of Allis-Chalmers design. There are a minimum of moving parts, and naturally, fewer parts mean less wear, less that can go wrong.

You enjoy 3-deep parts and service backing with practically "factory-town" service wherever you are! Allis-Chalmers' proven 3-deep dealer-branch-factory system means your dealer can obtain parts or factory-trained service help quickly from one of *18* strategically located factory branches.

There's an engine to EXACTLY fit your needs in the Allis-Chalmers complete line, 9 to 516 hp. Your choice of fuels, too — diesel, gasoline, natural or LP gas. See your Allis-Chalmers dealer, or write for complete information.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BO-5B

16 years and succeeds W. E. Geiser who has returned to the headquarters staff in Louisville, Ky. Geiser joined Tube Turns in 1929.

Becker Is New Works Manager For International Harvester

International Harvester Company announces P. A. Becker as works manager of its Melrose Park works construction equipment division succeeding A. H. Scherer who is retiring.

Becker joined the Harvester organization in 1933 as an apprentice toolmaker at the Chicago tractor works, advancing to Melrose Park works assistant general superintendent in 1947. Since 1949 Becker has served as assistant works manager at Melrose Park works.

United States Steel Corporation Announces Division Appointments

United States Steel Corporation has announced plans to operate the corporation's Gerrard Steel Strapping division as a part of United States Steel Supply division. The company has also released several new appointments.

The new promotions include D. L. Marsh, district engineer at Midland, Texas; J. F. Jenkins, store manager at Red Deer, Alta., Canada; R. L. Swank, manager of sales of plastic pipe for National Tube division of United States Steel at Pittsburgh, Penn.; J. E. Chenault, Jr., assistant district manager at Edmonton, Alta., and W. S. Palmer, area merchandise manager at Calgary, Alta., Canada.

New field representatives and their posts are Frank Mumford, Jr., Odessa, Texas; B. T. Knight, Woodward, Okla.; J. A. Groves, Estevan, Sask.; Matthew Sydor, Estevan; B. T. Knight, Woodward; W. J. Millar, Okotoks, Alta.; G. A. Boring, Kermit, Texas; Wornock Hipp, Jr., Hobbs, N. M.; B. T. Stark, Houma, La.; R. C. Birdsell, Dawson Creek, B. C., Canada, and Jackie R. Hunnicut, Denver City, Texas.

W. D. Willes

F. J. Langtry

Rockwell Manufacturing Co. Announces 7 New Appointments

Weldon D. Willes, assistant to the president of Rockwell Manufacturing Company's Locomotive Finished Material division at Athison, Kansas, has been named general manager of the company's new 180,000 square foot valve plant at Kearney, Neb.

Fred J. Langtry has been promoted to works manager at Kearney. He was formerly assistant works manager of the Oakland, Calif., plant.

New sales officials for Rockwell in Pittsburgh, Penn., are Thomas I. Stacey, former Houston district sales manager, who will be assistant product manager of transmission line valve sales; Richard E. Miller, former gas sales supervisor in the New York district, who will be assistant product manager of valve lubricants and accessories; Jack W. Harris, former Houston senior sales engineer, and now assistant product manager of refinery and chemical valve sales; John R. Applegate, former Chicago major senior sales engineer most recently with Detroit branch office, and now assistant product manager of utilities and valve sales, and Clyde H. Chronister, former Tulsa senior sales engineer, and now assistant product manager with production valve sales.

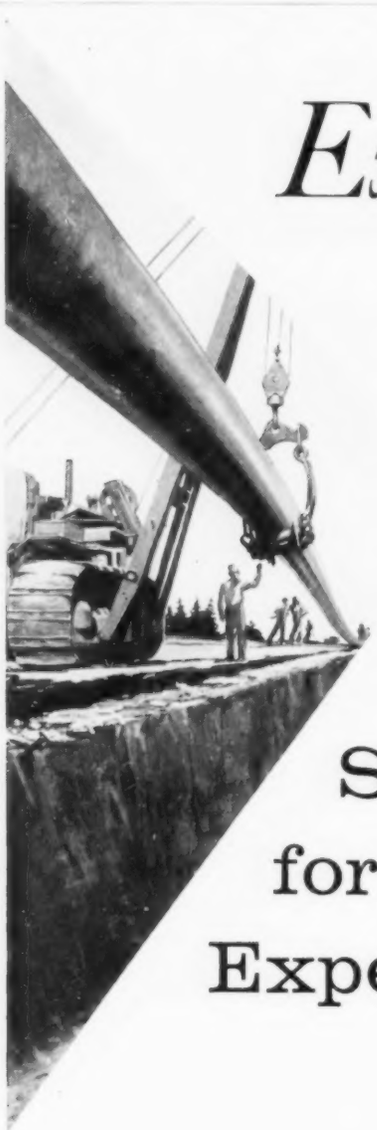
Garlock Packing Company Names Robertson to Sales Position

Harry A. Robertson, Jr., has been assigned to the new sales territory in the Central section of Ohio for Garlock Packing Company of Palmyra, N. Y.

Robertson received his electrical engineering training with the U. S. Navy.

New Corporation to Make Traps, Absorbers, Controllers

Pulsation Controls Corporation was recently formed in Santa Paula, Calif., to



Experience

There is no Substitute for Proven Experience

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CONTRACTING COMPANY
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OIL • GAS
GASOLINE
WATER PIPE LINES

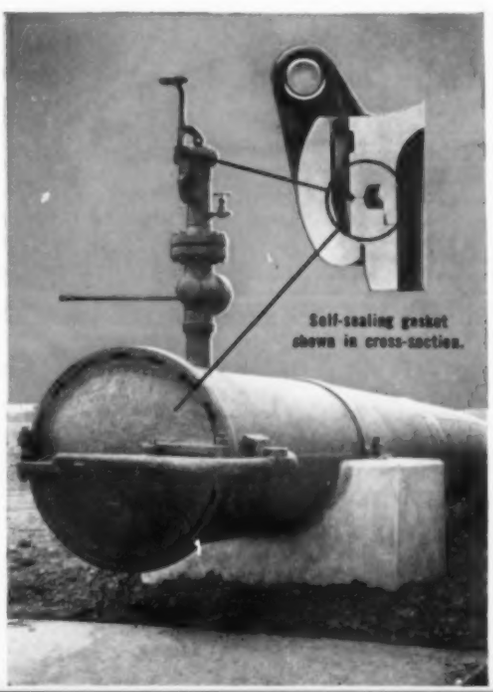
2807 BUFFALO SPEEDWAY
HOUSTON 6, TEXAS

If you are a pipeliner

you'll appreciate this self-sealing gasket in UNIBOLT scraper trap and blowdown closures

Little things . . . like the gasket for a scraper trap or blowdown closure for example . . . can be a big headache. But not this one. It is the self-sealing gasket used in UNIBOLT pipeline couplings. The UNIBOLT design makes line pressure do the sealing. And this design practically encloses the gasket in steel so that when the closure is opened and closed the gasket is hardly disturbed. Made of oil- and gas-resistant Hycar nitrile rubber, this gasket will last indefinitely under normal conditions.

UNIBOLT scraper trap and blowdown closures are hinged for easy operation. Release only two bolts and the closure swings open and shut like a door. No heavy lifting. No time-consuming multi-bolt flanges. Write for complete information.



THORNHILL CRAVER CO.

P. O. Box 1184, Houston, Texas

manufacture and market, under license from Everett and Everett, Engineers, a complete line of Everett pulse traps, industrial mutes, shock traps, vibration absorbers and dynamic ratio controllers.

President and chief engineer of the firm is W. S. Everett who was formerly with Standard Oil Company of California and the Air Missile Test Center at Point Mugu, Calif. Fred M. Stewart is vice president and general manager of the firm.

Schubert Is Sales Engineer For Allis-Chalmers Company

Appointment of William A. Schubert as engineer in charge of rotary compressor sales has been announced by Allis-Chalmers Manufacturing Company.

Schubert has been associated with the firm since 1937 and in recent years has been an application engineer in the Compressor department.

Walworth Company Selects New Director of Purchases

Alvan Markle is the new director of purchases for Walworth Company and will be responsible for establishing procurement policies and procedures and for functional control of unit purchasing directors and agents.

Markle came to Walworth from Crown Cork and Seal Company where he was purchasing manager.

Frazier, O'Neil Are Members Of Producers' Council Groups

John Frazier and John O'Neil, officials of American Air Filter Company, have been elected to membership of working committees of the Producers' Council, Inc., national organization of building equipment manufacturers.

Frazier, sales promotion manager, and O'Neil, assistant advertising manager, have been selected for marketing research and merchandising committees, respectively.

Pittsburgh Coke & Chemical Appoints Caldwell Sales Head

John H. Caldwell has been promoted to assistant sales manager of the Protective Coatings division of Pittsburgh Coke & Chemical Company.

John H. Caldwell

In his new post Caldwell will be in charge of administration of the protective coatings field sales force and will supervise regional sales managers in New York, Chicago, Houston and Los Angeles. He was formerly regional sales manager in Houston.

Fred Zimmerman Ends 46 Years With Broderick & Bascom Rope

Fred Zimmerman, vice president of sales for Broderick and Bascom Rope Company of St. Louis, Mo., has retired after 46 years with the firm.

Fred Zimmerman

Zimmerman started his affiliation with Broderick and Bascom in 1911 in the St. Louis factory and has been associated in sales of the company's products since that time.

He became sales manager in 1930 and vice president in charge of sales in 1951.

Jones & Laughlin Steel Corp. Now Producing Electricweld Pipe

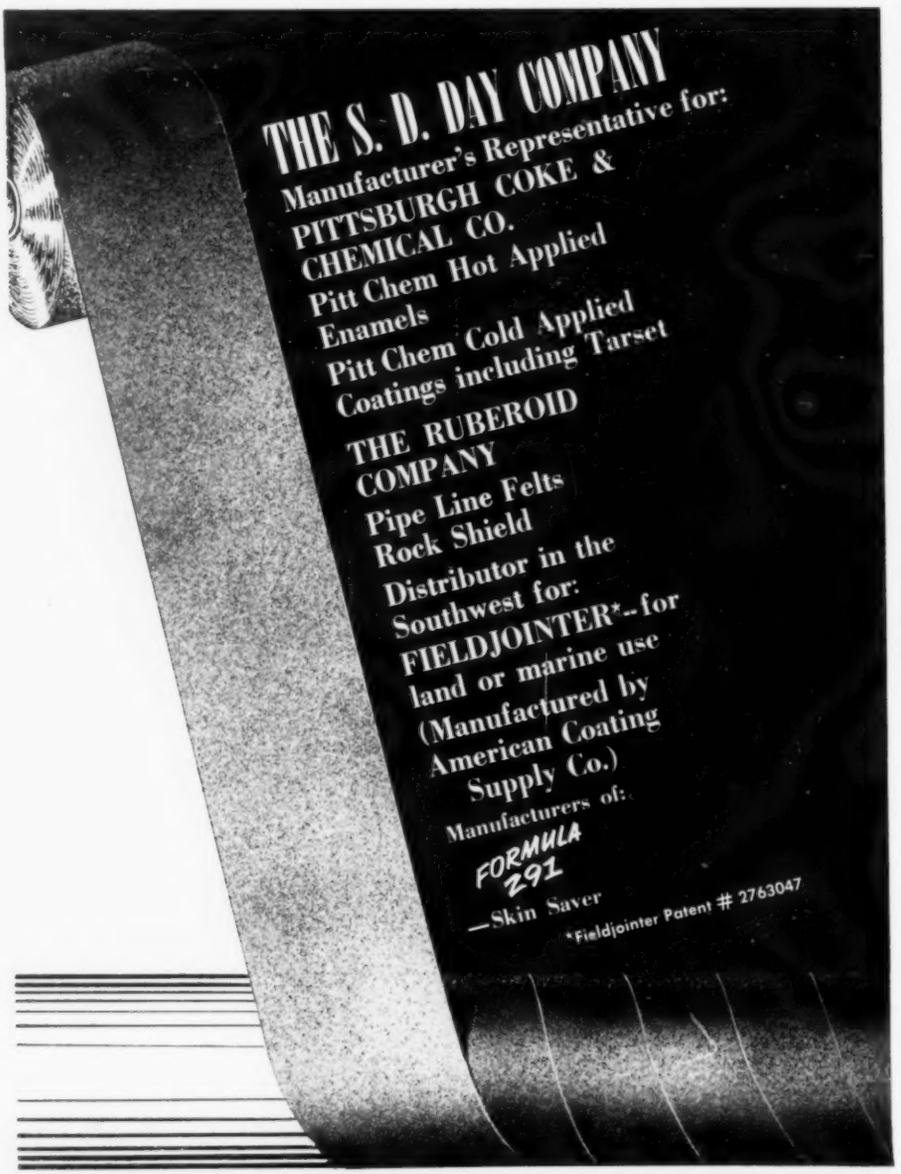
Jones and Laughlin Steel Corporation has started production of electricweld line pipe at its new $8 million Electricweld Pipe Mill at the Aliquippa, Penn., works.

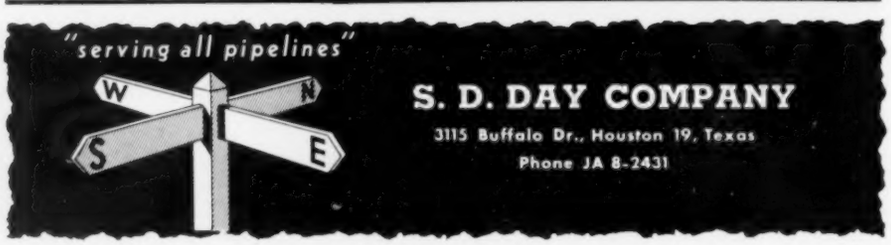
The plant's operations are controlled from strategically located push button stations. The speed of each unit is adjusted automatically to synchronize with other units.

Caterpillar Tractor Company Announces Staff Reorganization

Caterpillar Tractor Company has announced reorganization of its Manufacturing General office into three departments.

L. J. Ely will be director of manufacturing and will give administrative guidance to the three departments. Hugh Boggs will be manager of planning and plant engineering. Roy McCluskey has been appointed manager of production control. Dale Wright will be manager of quality control.





VALLEY

LIGHTWEIGHT

STEEL PIPE

Manufactured in new, modern continuous mills to specifications per ASTM-A 139 Grade B; which also conforms to API 5L standards. Automatic electric butt welded process, using CO^2 gas. Pressure tested. Ideal for use as line pipe for gas and oil, for municipal water systems and irrigation, high velocity tubing for air conditioning and heating, heat exchangers, well casing, grain and mineral spouting, mining, signs, as well as many other manufacturing and industrial uses.

Available in 6", 6⅝", 8", 8⅝", 10", 10¾", 12", 12¾", 14", 16" diameters; from 14 gauge up to and including .219 wall thickness; 20, 30 or 40 foot lengths; in plain or belled ends. Quotations available for Victaulic or Dresser end processing, and coating and wrapping.

VALLEY

Available for immediate delivery.

Write or call for full specification and production data to: **Steel Pipe Division**

Manufacturing Company Valley, Nebraska

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the products you need

BITUMASTIC
HOT & COLD APPLIED COATINGS

TAPECOAT
PIPE JOINT PROTECTION

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PIPELINE FELT, PADDING & GLASS PIPE WRAP

WILBUR & WILLIAMS

TOTRUST

PERMAGILE

and the service you deserve

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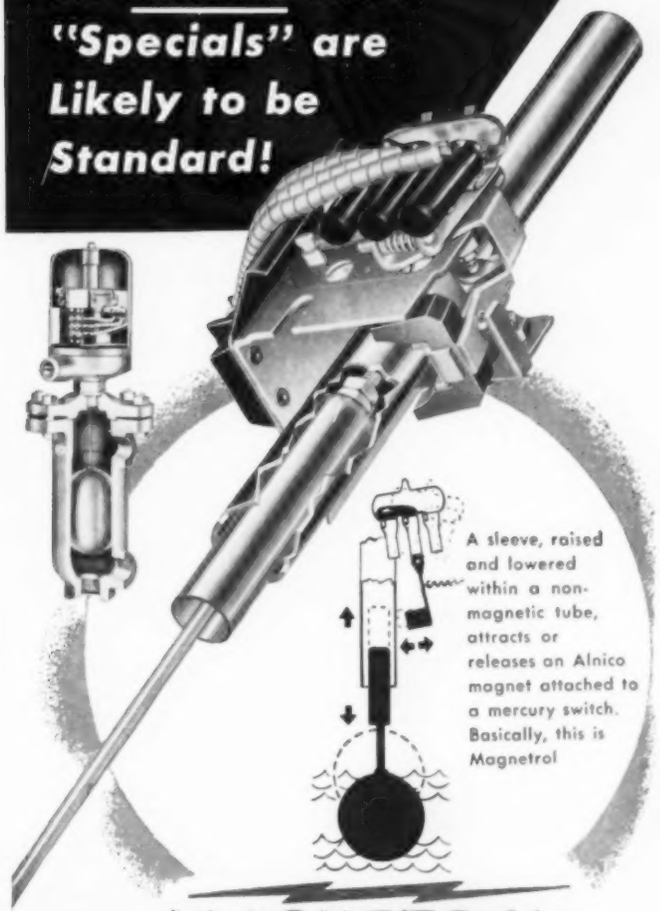
INDUSTRIAL CORROSION PREVENTION

So SIMPLE that "Specials" are Likely to be Standard!


A sleeve, raised and lowered within a non-magnetic tube, attracts or releases an Alnico magnet attached to a mercury switch. Basically, this is Magnetrol

MAGNETROL

The World's Most Dependable

LIQUID LEVEL CONTROL

Because of the utter simplicity of Magnetrol's magnetic operating principle, standard models can be easily adapted to meet any special requirements for pressure, temperature or corrosive liquids . . . and usually at little extra cost. This Magnetrol versatility has solved all kinds of tough level control problems . . . and given our engineers wide application experience that can be invaluable to you.

Magnetrol is so simple that failure is all but impossible! Using only permanent, unfailing magnetic force for its operation, there's nothing to wear out . . . no diaphragms or bellows to stiffen and rupture . . . no electrodes to short or corrode . . . no packing to bind or leak. Magnetrol is practically maintenance-free! Magnetrol units are available for controlling level changes from .0025-in. to 150-ft. . . . with multi-stage switching when desired. Send coupon for full details.

MAGNETROL, Inc.

Send Coupon For Full Details

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Please send me catalog data and full information on Magnetrol Liquid Level Controls. 6

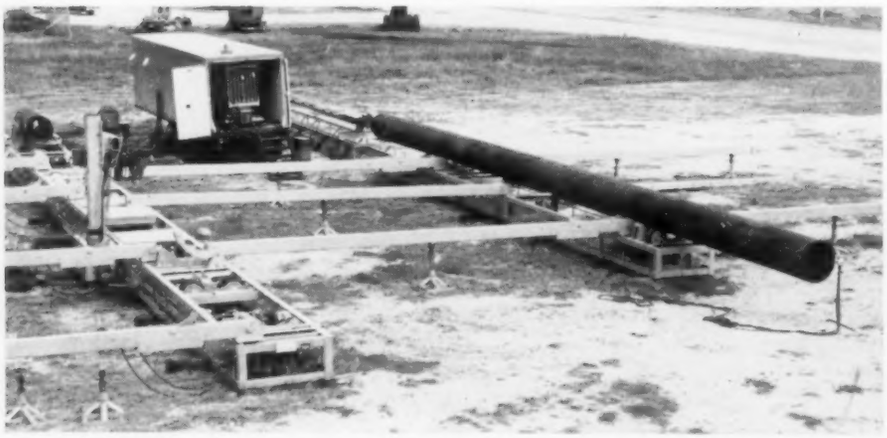
Name_____

Company_____

Address_____

City_____ Zone____ State_____

What's New in EQUIPMENT



Double Jointer

The first production model of the Crose-Price-O Matic double jointing process was demonstrated recently.

Developed by M. J. Crose Manufacturing Company of Tulsa in collaboration with the H. C. Price Company, the fully automatic double jointer for large diameter pipe demonstrate savings in time and labor by double jointing pipe in strategically located yards.

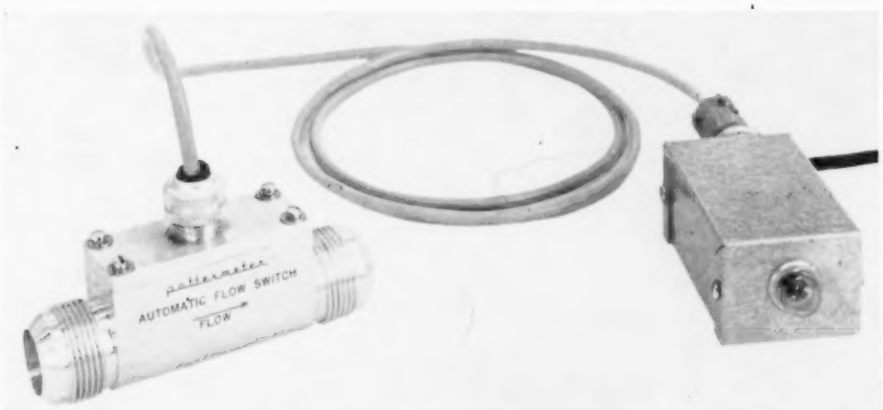
D. M. Curran, president of Crose, pointed out that with this equipment manual welds out on the line are cut in half and that finest shop techniques are brought to the field through controlled welding conditions.

The double jointer utilizes maximum automation of pipe handling equipment and highest quality welds—by submerged arc welding heads—are achieved in sub-zero weather.

Production rate for 30-inch pipe is 10 to 12 welds per hour. Welding time varies slightly with the size of pipe, but handling time into and out of welding fixture remains constant. The double jointer is designed to handle pipe 24 inches to 36 inches in diameter.

(This item supplements M. J. Crose Manufacturing Co., Inc. data on Pages 104-105 of the Pipe Line Composite Catalog, 1st Edition.)

For more data, circle **No. E1** on Readers' Service Card, last page this issue.



Flow Switch

A flow-sensitive device which, in its one-inch size, will detect flows in the order of one-quarter to one-half gallon per minute and to activate a switch for indication or control in innumerable flow systems has been announced by Potter Aeronautical Corporation of Union, N. J.

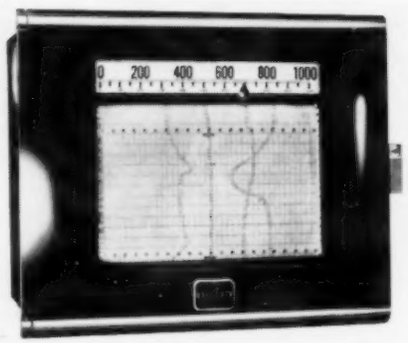
Compact and designed with in-line flow characteristics, models are available to operate at any line pressure. Ruggedized for severe industrial applications, the Potter-meter Flow Switch is also adaptable for airborne applications. It is explosion-proof, lightweight and has special features of rugged design to perform under conditions of vibration, shock and temperature extremes.

In the airborne version the one-inch unit weighs 12 ounces; the one and one-quarter inch, 16 ounces; and the two-inch, 20 ounces. The one-inch unit has the added advantage of indicating flows down to 0.1 gallons per minute if, after a valve has been closed, there is still some seepage into the line. This characteristic is useful in determining completeness of flow shutdown. In other size lines it has an equally favorable low-flow detection characteristic proportionate to the pipe size.

Versatile in its application, this switch is also capable of detecting reverse flow, it will operate in any attitude in either liquid or gas, and can be completely submerged.

(This item supplements Potter Aeronautical Corp. data on Page 333 of the Pipe Line Composite Catalog, 1st Edition.)

For more data, circle **No. E2** on Readers' Service Card, last page this issue.



Telemeter Receiver

A multiple-printing strip-chart Metameter telemeter receiver has just been announced by the Bristol Company of Waterbury, Conn. The receiver will print out up to 16 separate records from as many telemetering transmission centers.

Using a multiple-switching arrangement, the new receiver can monitor successfully a large number of values from any distance necessary. The variables need not be all of one kind, but could be a combination of pressure, flow, temperature or liquid level.

The instrument prints on a 12¼-inch wide-strip chart and is available with either a 5-second or 15-second time-impulse telemetering system.

For more data, circle **No. E3** on Readers' Service Card, last page this issue.

Hot Water Heaters

New type hot water heaters are available for three models of Caterpillar-built Tractors. The heaters may be used with Caterpillar D9, D8 and D4 Tractors equipped with cabs and are available in two types, recirculating and fresh air.

The recirculating type reheats the air supply within the cab while the fresh air heating system uses outside air. Use of the latter system reduces the possibility of condensation on windows and the need for defrosters and provides a constant supply of fresh air for operator comfort.

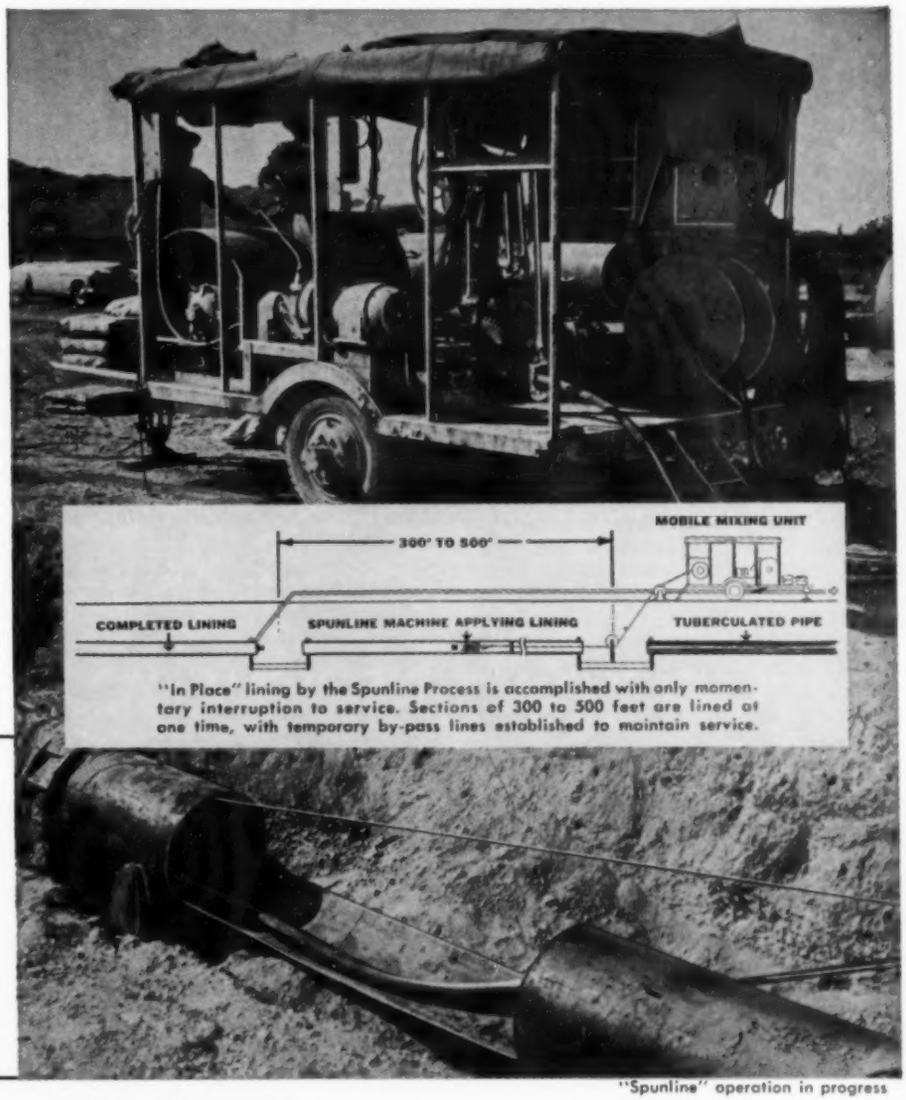
The new heaters replace the recirculating type heater formerly available for these tractor models. Both heaters are available either factory-installed on new machines or for installation on machines already in operation.

(This item supplements Caterpillar Tractor Co. data on Pages 67-69 of the Pipe Line Composite Catalog, 1st Edition.)

For more data, circle **No. E4** on Readers' Service Card, last page this issue.

NEW! "Spunline" Process for cement mortar lining of pipe interiors "in place"

- for pipes 6" to 16" in diameter *(particularly cast iron)*
- Combines best features of world-famous Tate and centrifugal lining processes



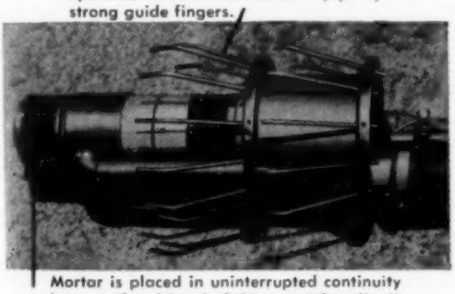
"In Place" lining by the Spunline Process is accomplished with only momentary interruption to service. Sections of 300 to 500 feet are lined at one time, with temporary by-pass lines established to maintain service.

"Spunline" operation in progress

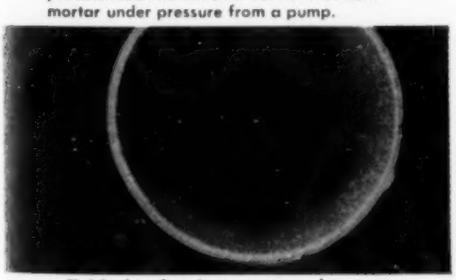
ONLY MOMENTARY INTERRUPTION TO SERVICE!

Gives new pipe performance
Restores flow coefficients
Reduces leakage
Reduces pumping and maintenance costs
Protects against corrosion, contamination, and water discoloration at much less than the cost of installing a new line

Spunline machine is centered in pipe by strong guide fingers.



Mortar is placed in uninterrupted continuity by centrifugal head of this new "Spunline" process machine which is fed with cement mortar under pressure from a pump.



Finished surface has orange peel texture.

HOW IT'S DONE

The "Spunline" process might be called a "marriage" of the conventional "in place" Tate and centrifugal processes.

It is a process of applying a cement mortar lining "in place" to small diameter pipe, developed to provide a thin lining for prevention of further interior corrosion and to restore hydraulic flow, particularly in cast iron pipe. The mortar is placed in uninterrupted continuity by a centrifugal machine (a centrifugally rotating head) projecting the mortar against the wall of the pipe (pulled through, as in the Tate process) with minimum rebound and with sufficient velocity to cause the mortar to be densely packed and adhere in place. The finished thickness of the mortar lining may be ⅛" or more, with a plus or minus variation of 1/16". The finished surface is not troweled and has an orange peel texture.

Why you'll like the "Spunline" Process

1. Lining can be carried through many bends and certain fittings.
2. Lining can go right past smaller openings or corporation stops . . . no need for plugging such openings.
3. Lining can be thinner than usually applied by other processes, with closer tolerances.
4. Compares favorably in cost with other methods.

Write today for full information!

PIPE LININGS A Division of American Pipe and Construction Co.

2414 East 223 St. (P. O. Box 457)
Wilmington, California

Specializing in Pipe Protection Problems
- Tate, Centriline, Spunline "In Place" Interior Cement Mortar Lining - "In Plant" & "Railhead" Centrifugal Spinning of Cement Mortar or Coal Tar Linings—Somastic® Exterior Coating - Reclamation - Pipe Wrapping - Removal of Old Wrapping, Straightening, Blasting, Beveling, Testing.

For more data on advertised products, use Readers' Service Cards, last page.

Testing Transducer

A new ultrasonic testing transducer with increased sensitivity has been developed by Branson Instruments, Inc., of Stamford, Conn. The advantages of ultrasonic thickness gaging and flaw detection can be extended to materials which have been difficult or impossible to test with standard transducers, such as lead, laminated plastics, castings, severely corroded sections and other poor transmitters of ultrasonic energy.

Because of its unusually high resolution, the Type Z transducer will detect flaws which are very close to the surface of the material under test. All testing is nondestructive, since access to only one side of the work is required.

Using new materials and construction techniques, the transducer's sensitivity is much greater than that of quartz, noticeably more than conventional barium titanate and equal to that of lithium sulfate. Water and temperature pose no problem.

For more data, circle **No. E5** on Readers' Service Card, last page this issue.

Automatic Device

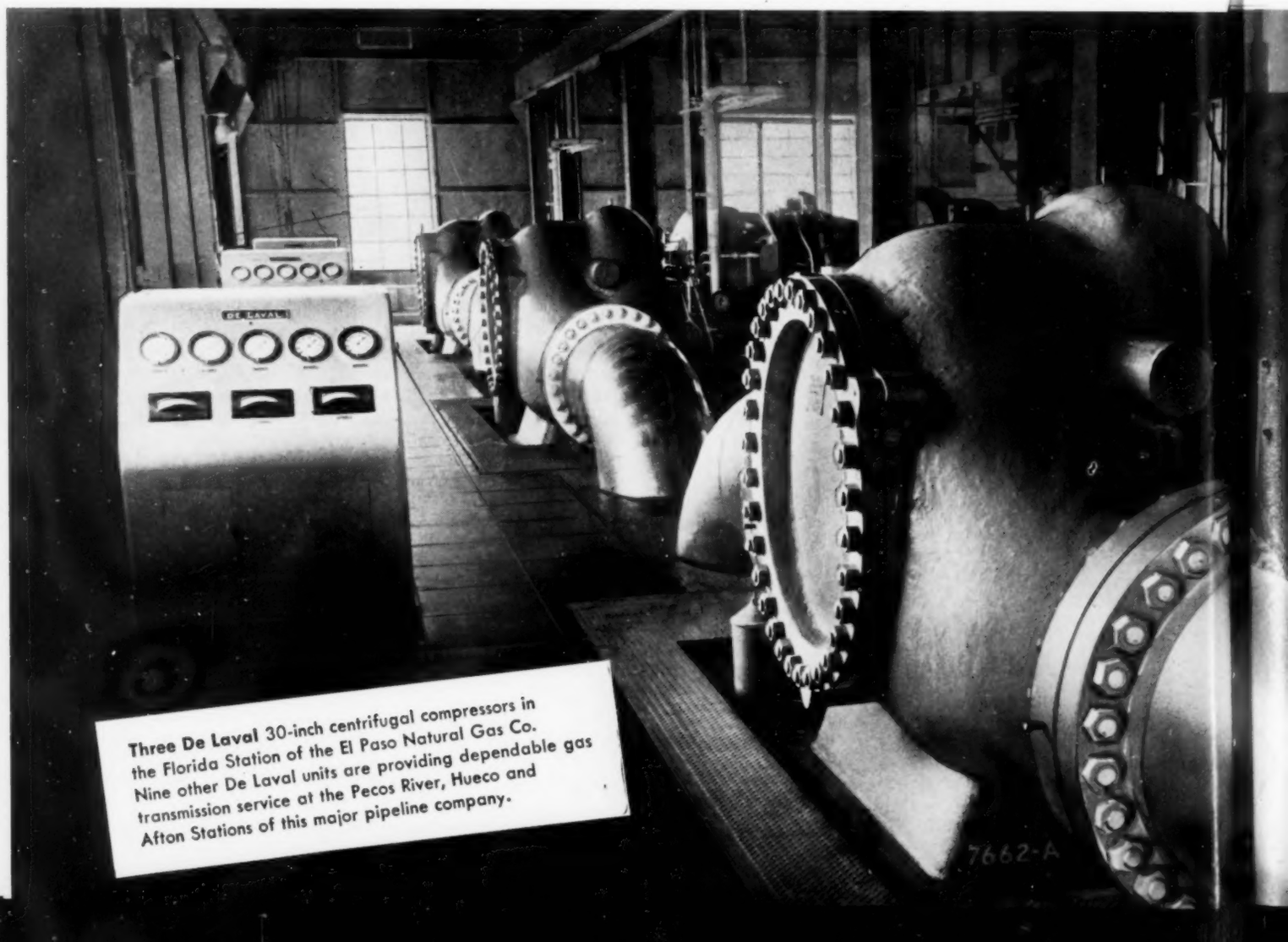
Electronic Secretary Industries, Inc. of Waukesha, Wis. has introduced a new unit capable of electronically and automatically detecting a wide variety of abnormal conditions and of alerting a designated person by telephone.

The device, known as the Electronic Sentry, is designed to provide an instant automatic alert to personnel responsible when the possibility of danger due to fire, pressure, water levels, temperature, theft or any other hazardous conditions exist.

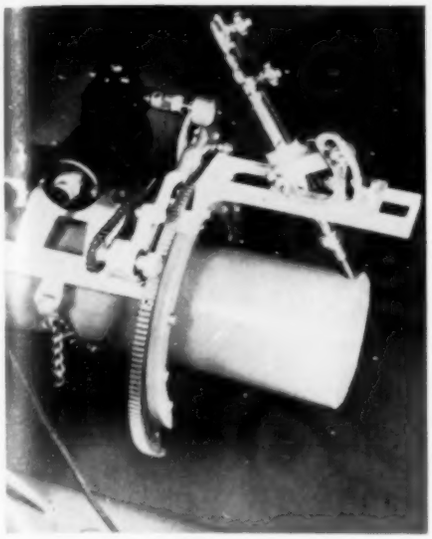
When an alert condition occurs, a primary detecting device such as a thermostat, a pressure control, a capacitive burglar detector, a water level measuring gage, or any control capable of closing a switching circuit, causes the Electronic Sentry to go into action.

The Electronic Sentry will then connect itself across the telephone line, dial a predetermined telephone number electronically and by means of a pre-recorded message, inform the person who answers of the nature of the trouble. The warning message is transmitted repeatedly so that if it is not understood the first time, repetition will insure comprehension. At the end of a pre-determined time, the unit disconnects momentarily from the telephone line. If the condition that caused the warning is not corrected, the Electronic Sentry will again dial the number and repeat the message until the warning is acted upon.

For more data, circle **No. E6** on Readers' Service Card, last page this issue.



Three De Laval 30-inch centrifugal compressors in the Florida Station of the El Paso Natural Gas Co. Nine other De Laval units are providing dependable gas transmission service at the Pecos River, Hueco and Afton Stations of this major pipeline company.



Motorized Machine

The H & M Pipe Beveling Machine Company of Tulsa, manufacturers of pipe cutting and beveling machines, are now making a motorized machine, the H & M Motorized Unit, which provides completely automatic operation in cutting and beveling on pipe ranging in size from 1½ to 36 inches. This unit can be attached to any one of H & M's seven standard machines.

The attachment is powered by a fractional horsepower ac-dc electric motor that is affixed to the machine by means of a mounting bracket. Switching from manual to automatic or vice versa is made easy by the quickly detachable mounting bracket. A flexible coupling is used to connect the motor with the crank pinion, which drives the main gear and the cutting torch around the pipe.

(This item supplements H & M Pipe Beveling Machine Co. data on Page 208 of the Pipe Line Composite Catalog, 1st Edition.)

For more data, circle **No. E7** on Readers' Service Card, last page this issue.

Syncroverter Chopper

A new syncroverter chopper with a center-tapped coil has just been announced by the Bristol Company of Waterbury, Conn.

The new chopper should prove useful in a variety of special driving circuit applications, such as flip-flop, push-pull or pulsed type. It offers the same contact ratings and high degree or reliability in dry circuit applications as does the company's standard syncroverter chopper.

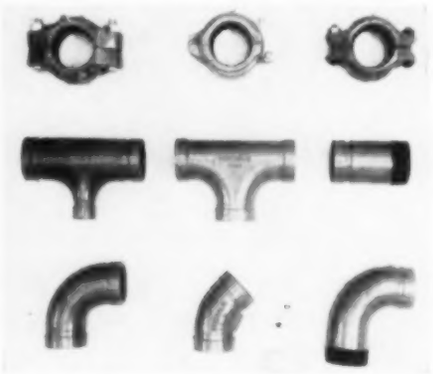
As a result of this coil construction, the unit can also be used as a polar relay, when a biasing voltage is applied, or as a true differential relay, which operates at a given predetermined differential, rather than on a specific amperage value for either coil. Coil requirements vary according to application; typical applications require approximately 90 peak ampere-turns.

For more data, circle **No. E8** on Readers' Service Card, last page this issue.

Fittings

A complete line of full-flow fittings and three styles of quick couplings for use in the recently announced "Vic-Easy" method of jointing light-weight, rolled-groove pipe and tubing—are available from Victaulic Company of America, Elizabeth, N. J.

The line includes full-flow elbows, tees, reducing tees, reducers, of every style for use with either lightweight steel or aluminum pipe with rolled-groove ends.



Adapter nipples and other adapter units for connecting grooved-end piping to threaded, flanged or welded outlets are also available.

Fittings are interchangeable and can be installed with any of the three styles of Victaulic couplings including standard, lightweight or snap-joint. The snap-joint coupling requires no tools for installation. Other Victaulic couplings can also be installed by one man, using a single wrench.

For more data, circle **No. E9** on Readers' Service Card, last page this issue.

DE LAVAL

CENTRIFUGAL COMPRESSORS

on the job at El Paso Natural Gas

De Laval centrifugal compressors offer many important engineering features. (1) They are designed to handle an increased ultimate flow, can be quickly converted to larger capacities by replacing the impeller, diaphragm and a few minor parts. (2) The high pressure shaft seal eliminates leakage, consumption of sealing oil is negligible. (3) There is only one moving part—the rotor—which has ample clearance. (4) Units are compact, require smaller foundations and smaller stations. (5) First costs and installation costs are low.

Bulletin 503 gives data on De Laval Centrifugal Compressors. Write for your copy.

DE LAVAL *Centrifugal Compressors*

DE LAVAL STEAM TURBINE COMPANY

884 Nottingham Way, Trenton 2, New Jersey

DL375

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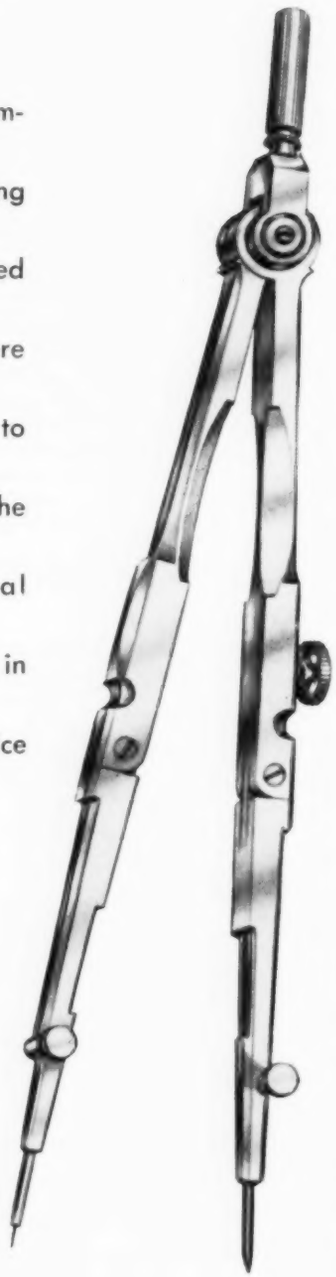

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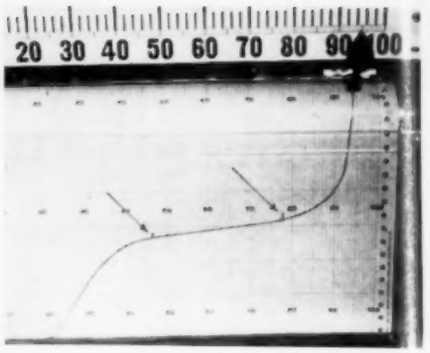


Chart Recorder

A three-position pen, a pen jogger, an events marker pen, a curve follower pen and an access door—all of which are designed for the fuller utilization of strip chart recorders—have recently been developed by Royson Engineering of Hatboro, Penn.

The three-position pen, which is affixed to the side of the recorder, writes on the margin of the chart and is said to be particularly useful for recording the output of an integrator. With the proper contacts on the integrator output, it is possible to make every tenth pip a different length, thus simplifying their counting. The jogger, which is useful in testing-machine work to identify the knee of the curve, is an attachment for the pen carriage and it contains a solenoid which, when energized, causes the pen to make a vertical pip that is easily identifiable.

The events marker pen, either two or three position, is designed to be mounted on the door frame of recorders on which no other space is available. The glass window is replaced by a piece of plexiglas which has a hole large enough to permit entrance of the pen. The curve follower pen, which easily clips on the follower index, is useful in producing a proven record on the Brown-Royson curve follower. The access door is used when it may be desirable to keep the door locked while permitting the writing of notes on the chart itself.

For more data, circle **No. E10** on Readers' Service Card, last page this issue.

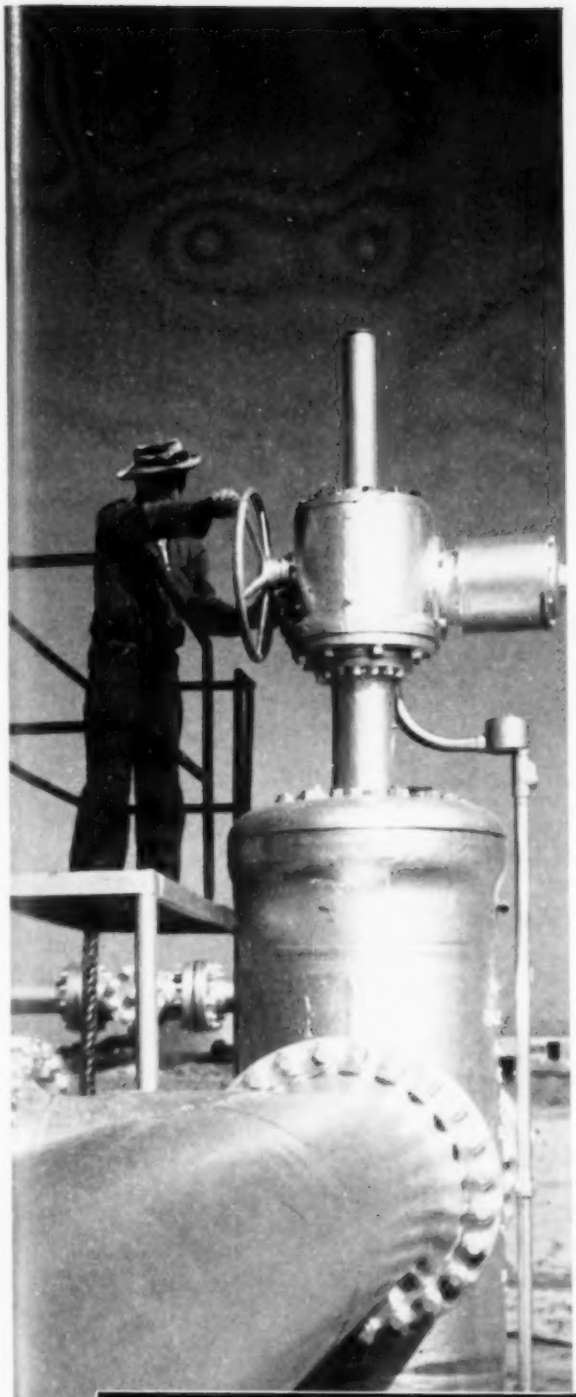
Pipe Line Viscometer

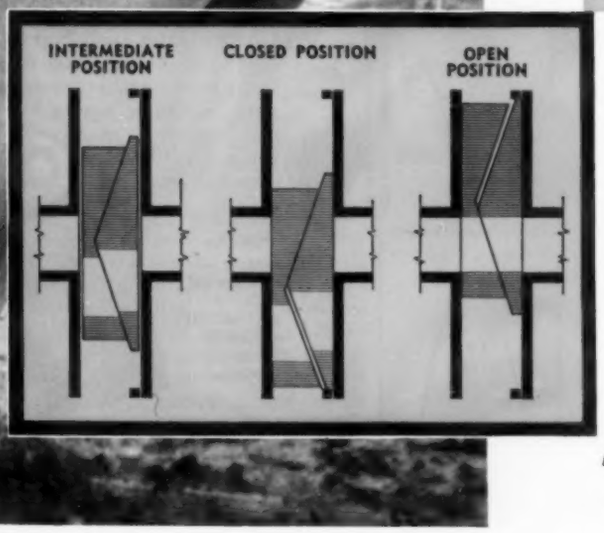
The Norcross Corporation of Newton, Mass. has developed a new Viscometer Measuring Element Model M12 that is particularly suitable for petroleum and other similar applications.

A side stream is usually established to flow a small sample through the new measuring element where the viscosity is determined under the actual pressure conditions of the system. The measured viscosity information is electrically transmitted to a Viscometer Recorder. Provision is made for installing a bulb in the system to measure the temperature of the product as it enters the Viscometer measuring chamber. The bulb operates a pneumatic transmitter which gives an air signal that is a function of the temperature.

Pneumatic temperature compensation is readily obtained with this new model.

For more data, circle **No. E11** on Readers' Service Card, last page this issue.





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W-K-M

Controlled Force Seating

The operator has complete control of the sealing action of W-K-M Parallel Expanding Gate Valves. Sealing is not dependent on either the line pressure or on stress wedging the gate in the valve.

When the W-K-M Valve gate unit reaches the full open or closed position, the torque applied by the operator through the stem forces the gate and segment to expand against the seats to form a perfect seal, upstream and downstream. CONTROLLED FORCE SEATING is completely independent of outside factors. Neither high nor low pressure nor line pressure fluctuation has any effect on the seal of W-K-M Valves.

When the valve is being opened or closed the CONTROLLED FORCE SEATING action is released and the gate unit is held in a collapsed position. This provides a slight clearance between the faces of the gate and the seating rings, allowing the gate to move freely.

Through-Conduit • Pressure Seal Bonnet • Enclosed Packing Gland • Superfinished Stems • Full Repair While Installed • Working Pressures to 2,000 lbs. WOG • Sizes 2" through 30".

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For design and operating features, sizes, pressures and complete dimensions, write Dept. J-1 for W-K-M Through-Conduit Gate Valve Catalog 300.

5716

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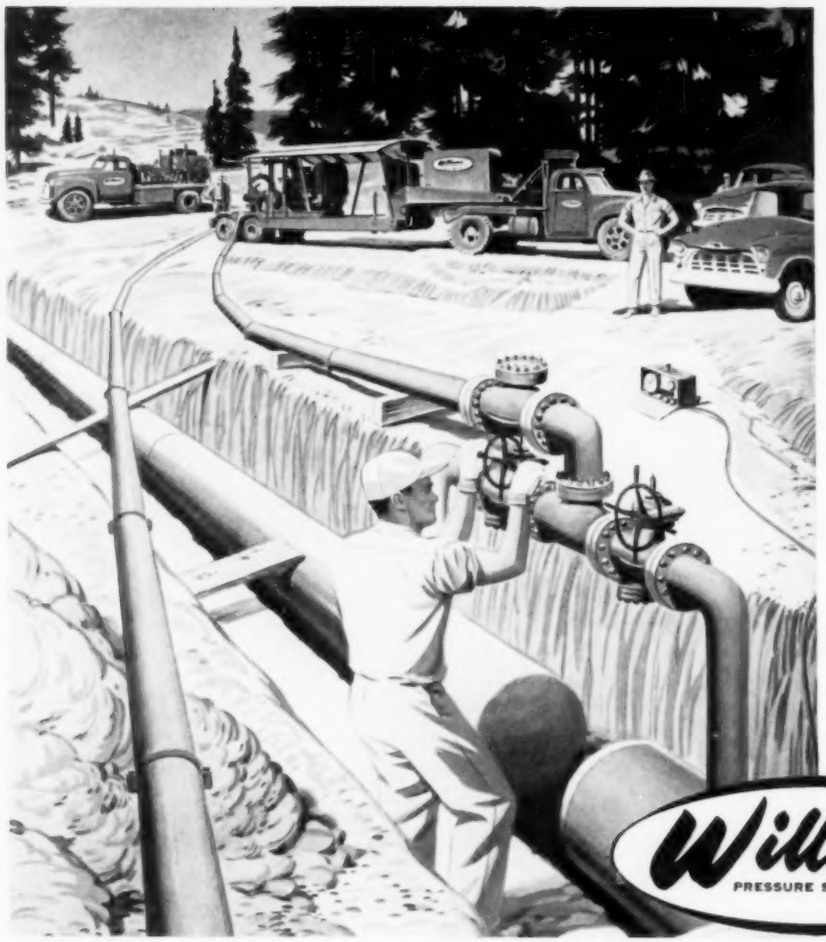
KEY-KAST ALLOY STEEL PIPING FITTINGS · KEY RETURN BENDS AND FITTINGS

For more data on advertised products, use Readers' Service Cards, last page.



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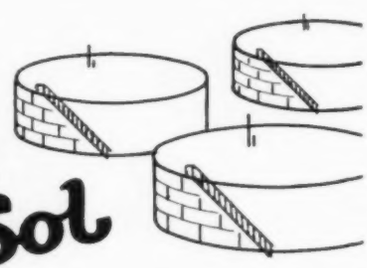

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BRAKESOL Treating Engineers have the experience and know-how to do a successful job. Contact them now!

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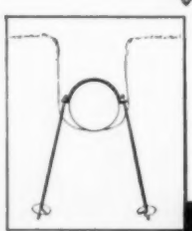
Here's the Fast Easy Way to Anchor Pipelines

No heavy equipment to haul. Cuts costs to a fraction.

Chance Pipe Line Screw Anchors and Brackets greatly simplify pipe line anchoring, compared to other methods, and save many dollars in pipe line construction.

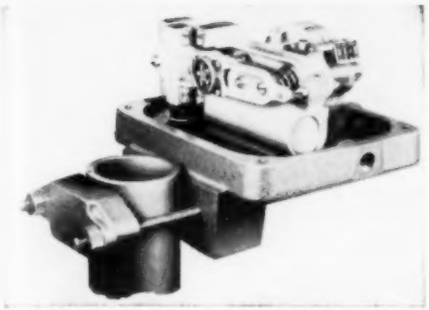
Chance Pipe Line Screw Anchors can be installed in pipe line ditches without extra digging. Using a power wrench the operator merely guides the anchor in place. The tool does the work



Can be installed in the ditch without extra digging.

Write for catalog showing oil industry applications of Chance Earth Anchors.

A·B·CHANCE CO.
CENTRALIA, MISSOURI
TORONTO, ONTARIO, CANADA



Temperature Transmitter

A new, completely designed temperature and pressure transmitter has been announced by Mason-Neilan, a division of Worthington Corporation. Designated Series 4600 for temperature and Series 4700 for pressure, these transmitters are pneumatic force-balance devices employing gas filled thermal systems for temperature measurement and bellows elements for pressure. The equipment has a balanced beam-design which permits mounting of the transmitter in any position without positional error.

(This item supplements Mason-Neilan Division of Worthington Corp. data on Pages 275-282 of the Pipe Line Composite Catalog, 1st Edition.)

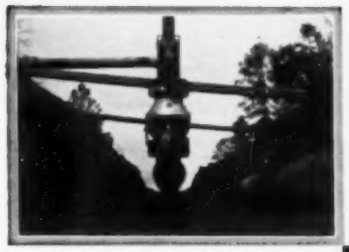
For more data, circle **No. E12** on Readers' Service Card, last page this issue.

Data Logger

Fischer & Porter Company of Hatboro, Penn. has introduced a new Data Logger (Series 1200) featuring "building-block" construction and flexible pinboard programming. Standard plug-in sub-assemblies make modification or expansion of the logger easy.

The Series 1200 logger, which can handle from 200 to 2000 input variables depending on the scanning method used, makes conversions to DC voltages, performs zero offset, scaling, characterization of non-linear inputs and records all readings on an automatic typewriter in digital form. If desired, readings can be recorded simultaneously on a punched tape which can then be used with an analog computer for closed-system control of the process variables.

For more data, circle **No. E13** on Readers' Service Card, last page this issue.



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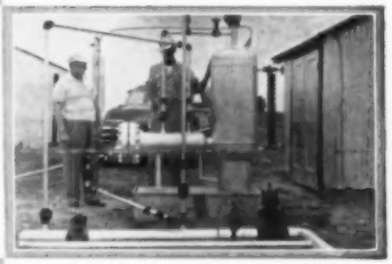

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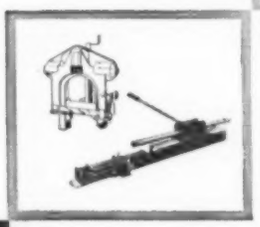

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Carbureted Power

Three new V-8's have been added to International Harvester's line of carbuerated power units.

The compact units, the UV-549, the UV-461, and the UV-401, offer an increase in horsepower over the units previously comprising the carbureted line.

The UV-549, most powerful of the three new units, develops 208 net hp, exceeding by 75 hp the previous most powerful unit in the carbureted line. The rig attains this power at 2600 revolutions per minute on gasoline, complete with regular accessories, fan and radiator. As a base unit, it delivers 257 hp.

The UV-461 boasts a hp rating of 174 ten hp, reached at 2600 rpm, and the UV-401 offers 160 net hp at 2800 rpm.

The new units are also available with LP-gas, and deliver about the same horsepower using this fuel as with gasoline.

For more data, circle **No. E14** on Readers' Service Card, last page this issue.

Transit Machine

A new model transit machine, the 11-B, has been introduced by Bucyrus-Erie Company of South Milwaukee, Wis. It features time-saving accessibility, low cost maintenance and fast mobility.

The new 11-B is readily convertible from a ten-ton lifting crane to a dragline, clamshell, hoe or shovel to handle a variety of jobs. It is mounted on a modern six-wheel drive carrier, which provides up to 47 mph speeds. The new carrier is designed for all-round mobility to cut high operating costs on busy scattered-job schedules.

(This item supplements Bucyrus-Erie Co. data on Page 60 of the Pipe Line Composite Catalog, 1st Edition.)

For more data, circle **No. E15** on Readers' Service Card, last page this issue.

Stalled Engine Starter

A new equipment item from Mondak Products Company of Chicago solves the aggravating problem of starting stalled engines.

Called the Mondak Model 300, the instrument mounts on either a 6 or 12-volt service vehicle and carries an auxiliary battery of the same type used in the vehicle. The unit becomes an integral part of the vehicle's electrical system and is permanently kept at full charge by the generator. The new model automatically starts any stalled engine when the unit's solid copper clamps are connected to the battery posts of the stalled engine and the remote control button is pushed. The Mondak automatically supplies double electrical power voltage to start either a 6 or 12-volt engine.

For more data, circle **No. E16** on Readers' Service Card, last page this issue.

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Site Planning
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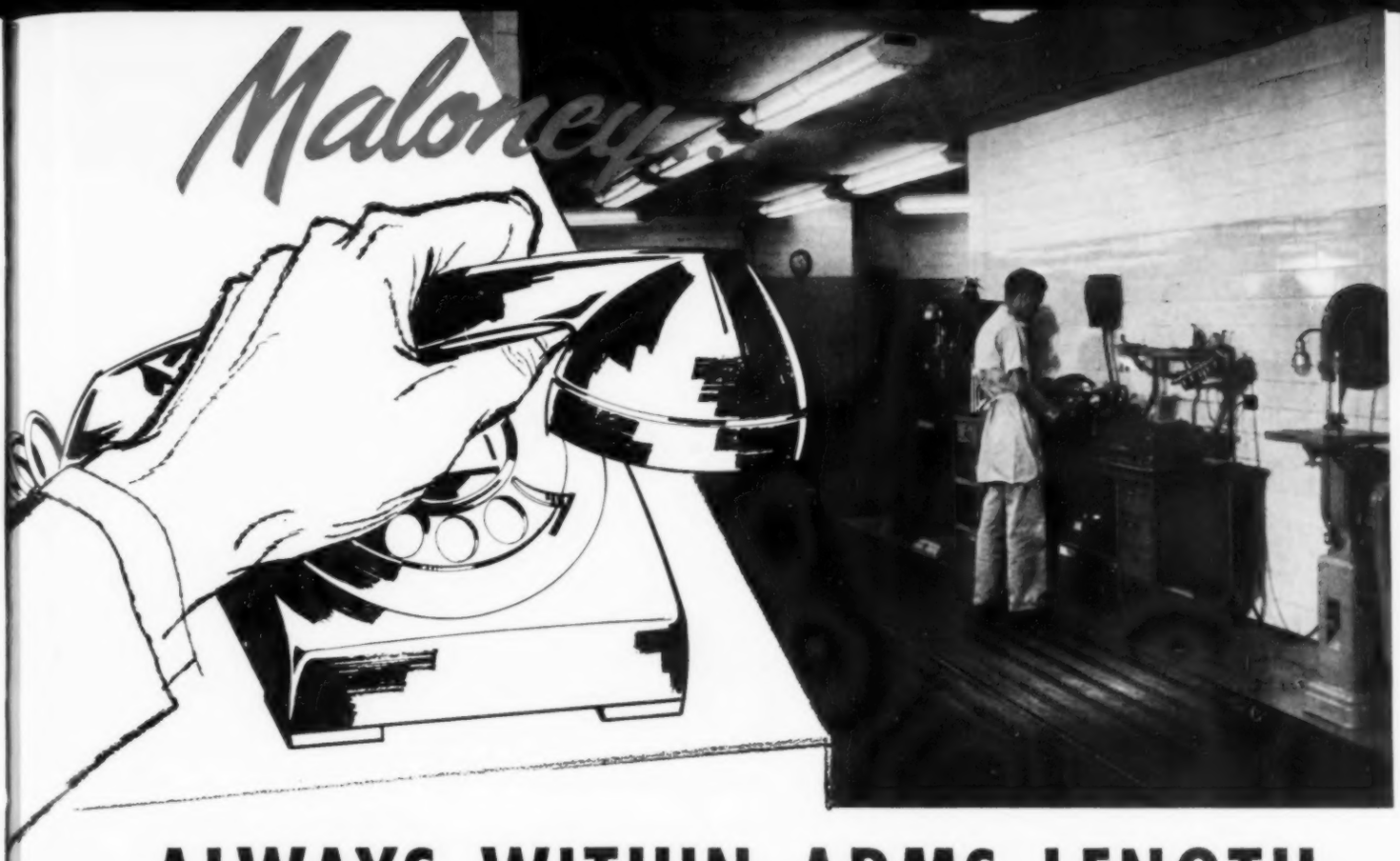
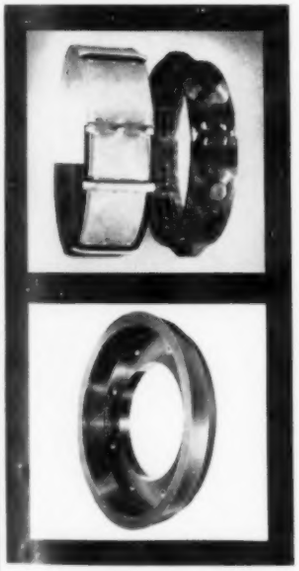


. . . ALWAYS WITHIN ARMS LENGTH

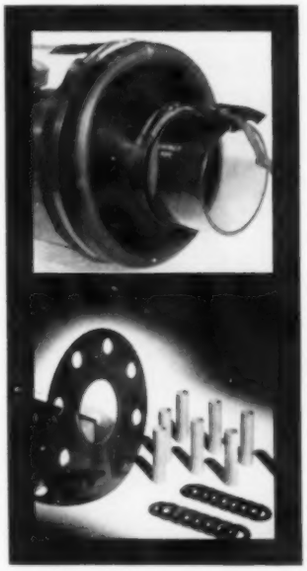


CROSSING INSULATORS

Truly rugged crossing insulators, the Maloney Models 55 and 57 shown are in addition to the wrap-around Model 56 crossing insulator in the complete line developed in the Maloney Research and Development Laboratory shown above. In crossing insulators, as in other products, Maloney research has set *new* industry standards.

SCRAPER CUPS

The unique lip design of the Maloney scraper cup insures complete effectiveness throughout the life of the cup. Completely adaptable to out-of-round and other adverse conditions, the Maloney scraper cup *has no equal*. If time is a factor, F. H. Maloney is *'within arm's length.'*



CASING SEALS

This zipper type casing seal is equally suited for new or replacement applications. The zipper joint assures a dust-tight, water-tight seal — installs in minutes. Slip-on types for new applications are also available. *Both* compensate for eccentric installations without any special handling, and are available to *you immediately*.

FLANGE INSULATION

Maloney Flange Insulation sets include all components for each joint; central gasket, sleeves, and washers of linen base Bakelite. High pressure applications are available with a Neoprene faced central gasket — *eliminating* any other gasket seal. Another result of *continuous* Maloney research.

SETTING *NEW* STANDARDS FOR THE INDUSTRY

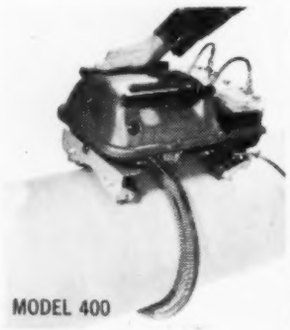
"Something better from the Irishman"

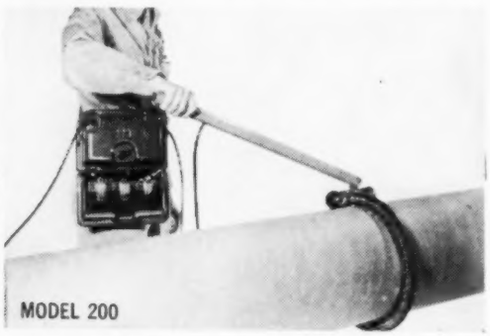
F. H. Maloney COMPANY

2301 TEXAS AVE. • HOUSTON, TEXAS

TULSA • LOS ANGELES • PITTSBURGH
Or Call Your Maloney Distributor

. . . our SPY HOLIDAY DETECTORS are as near as your telephone—in fact, in emergencies our own plane assures immediate service.


MODEL 400


MODEL 200

Rugged equipment for dependable holiday detection on ¾" to 36" pipe . . . signal—bell, light and spark . . . unaffected by dew or frost.

Call, wire or write.

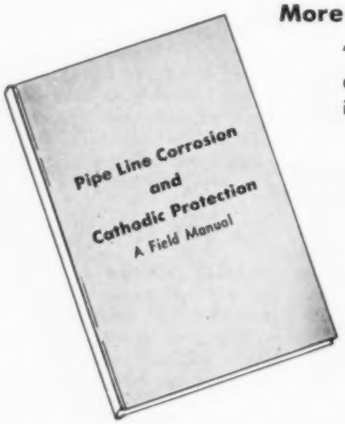
Pipeline Inspection Co., Inc.

2104 WYANDOTTE STREET • KANSAS CITY, MISSOURI

Day Phone: BAltimore 1-6036
Night Phone: HI 4-6745, EM 1-3824

More comments on this new Handbook:

"... a most practical on-the-job manual for men concerned with pipe line corrosion. We are ordering copies for each of our district engineers."



Pipe Line Corrosion and Cathodic Protection

By MARSHALL E. PARKER

This Handbook, written by Marshall E. Parker, consultant, is designed as a practical field manual. It is a 108-page pocket-size volume printed first as a popular series in WORLD OIL. The Handbook is illustrated with many charts and drawings and is completely indexed by subjects.

It presents comprehensive data on Soil Resistivity Surveys, Potential Surveys, Line Currents, Current Requirements, Rectifier Systems, Ground Bed Design, Magnesium Anodes, Stray Current Electrolysis, Interference in Protective Systems, Operations and Maintenance, and Coating Protection and Testing.

An appendix has been added of technical data on Underground Corrosion, Basic Principles of Cathodic Protection, Properties of Metals and Attenuation Equations. Order copies of this practical Field Manual now for each of your field men. Price $3.

Send for your FREE copy of the New Petroleum Book Catalog which describes the nature and contents of many books pertaining to the Petroleum Industry.

ADDRESS:

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GULF PUBLISHING COMPANY
P. O. BOX 2608
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High Pressure Control

A. W. Cash Company of Decatur, Ill., has developed a new high pressure control valve specially designed to handle gases and liquids in high pressure drop, on-off or throttling service, with dead-end shutoff.

Known as the Cash Standard Type 505, the new split body construction valve has a pressure and temperature rating of 10,000 pounds per square inch at —40 to 400° F. It is available with a direct or reverse action actuator with standard 3-15 and 6-30 psi instrument air range.

The body is forged stainless steel with hardened stainless steel trim. Connection sizes are ½ inch and ¾ inch. Connections for high pressure tubing are also included.

For more data, circle **No. E17** on Readers' Service Card, last page this issue.

Transmitter

A new carrier-current transmitter, fully transistorized for improved performance, is now being furnished to the utility industry by General Electric's Communication Products department.

Designated as Type CT-50B, the new unit supersedes GE's Type CT-20 transmitter, which has been widely used to transmit frequency-shift signals for impulse and frequency telemetering, automatic dispatching, remote station supervisory control and transferred tripping.

Extensive use of transistors and other components having the benefit of long life contribute to the increased reliability of the new device. The unit lowers maintenance costs by reducing the need for frequent checking.

(This item supplements General Electric Co. data on Pages 181-188 of the Pipe Line Composite Catalog, 1st Edition.)

For more data, circle **No. E18** on Readers' Service Card, last page this issue.

BEST . . .

FOR HANDLING

COATED PIPE

THE C·R·C PIPE SLING

Made especially for pipeline use, the C·R·C Pipe Sling permits safer handling of coated pipe. The sling is rubber covered and steel reinforced. Strong, but flexible, interlocking wire links enclosed in rubber give this belt high tensile strength . . . ultimate lifting capacity is 180,000 lbs. on 36 in. pipe size sling. Yet, the sling is just 5/8 in. thick for free usage in tight ditches. Call us for more details.

MAX. PIPE SIZE	PIPE SLING DIMENSIONS	SLING WEIGHT	IRON WEIGHT	ULTIMATE LIFTING CAPACITY
36"	12' 6"x30"x5/8"	237#	103#	180,000#
30"	10'x24"x5/8"	154#	84#	144,000#
24"	8'x20"x5/8"	106#	70#	120,000#
18"	6' 3"x16"x5/8"	71#	56#	96,000#
12"	4' 6"x12"x5/8"	39#	42#	72,000#

C R C

CRUTCHER • ROLFS • CUMMINGS, INC.

HOUSTON, TEXAS
P. O. Box 2073 UNderwood 4-6391

FARMINGTON, NEW MEXICO
P. O. Box 1207 DAvis 5-5523

IN CANADA: Canadian Equipment Sales & Service Co., Ltd.
7310 99th St., Edmonton, Alberta, Canada

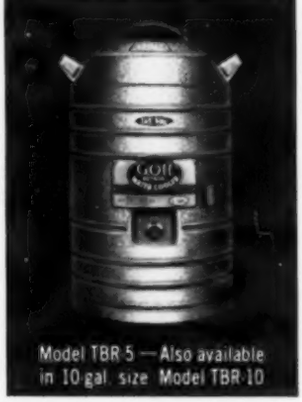
SUPPLY LINES FOR PIPELINES BEGIN AT . . .

E. W. Robinson Supply Company

PIPE
VALVES
FITTINGS
PIPE WRAP
INDUSTRIAL SUPPLIES

Houston, Dallas, Texas Denver, Colorado Ponca City, Okla.

Model TBR-3



Model TBR-5 — Also available in 10 gal. size Model TBR-10

ANOTHER

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GOTKOOL PRESENTS

THE Tall Boy

with the "TOWER BASE"

Still Highest Quality!

Set it on the ground, rig floor, or any flat surface. Useable anywhere! GOTT'S new "Tower Base"—engineered to provide a higher faucet that permits cups to be filled without holding the cooler or providing a stand. New convenience for "on the job" or "in the field"!

The Gotkool "TALL BOY" is another superior product by H. P. GOTT Mfg. Co., famous for 41 years for GOTKOOL water cans and coolers. First with the double-wall thermo design! Sweat-soldered seams! Soldered faucets! Only GOTT brings you so many exclusive features for longer service, rugged wear! Of course, standard models are still available as always.

Buy them from your favorite supplier

MANUFACTURING CO.
GOTT
WATER CANS AND COOLERS

THE H. P. GOTT MANUFACTURING CO.
P. O. BOX 702
WINFIELD, KANSAS

ALL'S WELL
with your Boilers
when you Use
SAND-BANUM
Pure Colloidal Concentrate
Ounces Only Once a Week
Remove and Prevent
Boiler Scale and Corrosion
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SAND-BANUM SPECIAL
in Handy Tablets
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TO REPAIR PIPE LEAKS—
QUICKLY, PERMANENTLY
ANY PRESSURE — ANY TEMPERATURE

SKINNER-SEAL EMERGENCY PIPE CLAMP
for pinhole or corrosion leaks.

SKINNER-SEAL PIPE LINE CLAMP for
long splits and bad corrosion leaks.
In stock—all supply stores
M. B. SKINNER COMPANY
SOUTH BEND 21, INDIANA, U. S. A.

Valve Seats

The Atlas Valve Company of Newark, N. J., has announced that Atlas Type B Pressure Reducing Valves are now being supplied with stellited main valve in addition to a stellited pilot valve and a stellited pilot valve seat already supplied in the valve.

The Atlas Type B is a spring-loaded, piston-operated valve actuated by an internal pilot. Single-seated, tight-closing and completely self-contained, it is designed for inlet pressures up to 1500 pounds per square inch at 900 degrees and will reduce to pressures as low as one-half psi in one stage.

For more data, circle **No. E19** on Readers' Service Card, last page this issue.

Packing Material

The Garlock Packing Company of Palmyra, N. Y., has introduced a virtually universal valve stem packing for medium temperature service. The new packing material, designated Style 5022, is a molded type valve stem packing ring made from copper wire inserted asbestos yarns which are braided and impregnated with Teflon suspensoid and die formed into rings.

Heart of Style 5022 is the Teflon which gives the packing unique characteristics and versatility. Style 5022 features mechanical strength and extreme toughness, heat resistance, high degree of chemical inertness and non-contamination factors. Teflon acts as a lubricant, thereby eliminating graphite or liquid lubricant that tends to dry out, burn out or exude.

For more data, circle **No. E20** on Readers' Service Card, last page this issue.

Tracing Unit

A lightweight, illuminated portable tracing unit, the Porta-Trace, is now offered by the Ozalid Division of General Aniline and Film Corporation of Johnson City, N. Y. The drafting unit can be used by design engineers, technicians and draftsmen in preference to old fashioned, costly stationary tracing tables.

The flexibility of the Porta-Trace permits use in a wide variety of operations. For photographic work, it can be used for opaquing, retouching, stripping-in and viewing transparencies. For reproduction, the Porta-Trace will speed the preparation of Bristol board originals, multilith paper originals, mimeographed stencils, color separations and visual-aid transparencies. In the drafting room, the Porta-Trace is thin enough to be slipped under a string type parallel rule on a standard size drafting board. Its compact dimensions permit convenient use under a standard straight edge or drafting machine. Rubber feet hold it in position, even at an acute angle.

For more data, circle **No. E21** on Readers' Service Card, last page this issue.

NEW LITERATURE

Electronic System

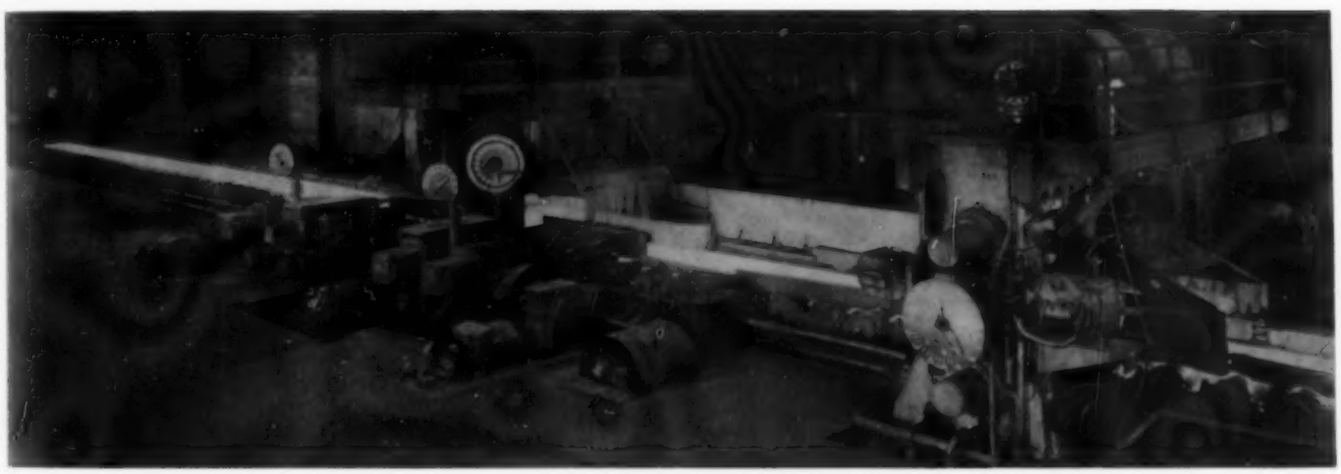
Texas Instruments, Inc., of Dallas have introduced the "Data Gage," a new transistorized electronic system for measuring the level of liquid in any of 100 remotely located storage tanks.

The system was designed and developed to control inventories in large installations such as tank farms. However, it can be used wherever liquid materials are stored in large tanks. A bulletin describing the system is available.

To get a copy, circle **No. E22** on Readers' Service Card, last page this issue.

Acme-Newport

ELECTRIC WELD LINE PIPE*
IS QUALITY FORMED FROM QUALITY STEEL



***SIZES AND WEIGHTS AVAILABLE**

O.D.	Wall	Wt. Per Ft.
4½	.125"	5.84
	.142"	6.61
	.156"	7.25
	.188"	8.64
	.219"	10.00
	.237"	10.79
6⅝	.134"	9.29
	.156"	10.78
	.188"	12.89
	.219"	14.97
	.250"	17.02
	.280"	18.97

ECONOMICAL WATERAIL-TRUCK DELIVERY

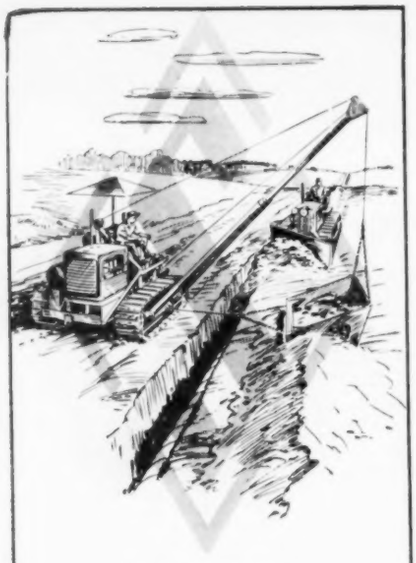
This Company is ideally situated on the Mississippi-Ohio River system and the great Cincinnati rail-truck hub. New barge facilities, 7 major railroads and 143 motor carriers enable Acme-Newport to give economical, dependable delivery to the entire area of the Middle West and South.

From melting to rolling to hydrostatic testing, Acme-Newport pipe is the responsibility of quality-minded men and management, in a basic steel producing plant. The steel is right, the operation specialized in a limited size range, and the result is complete dependability under high pressures. Every length is perfectly rounded; easy to bend, weld and install. Exceeds all requirements of API, ASTM and each individual job. Let Acme-Newport quote you on either standard or thin wall in 4" and 6" sizes.

Acme-Newport Steel COMPANY

NEWPORT, KENTUCKY

A SUBSIDIARY OF ACME STEEL COMPANY



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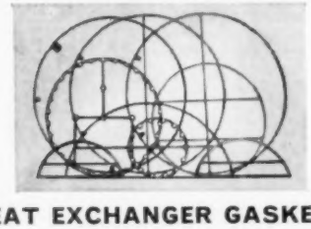
For Every Purpose



HEAT EXCHANGER GASKETS

Made in any size or shape needed in double jacket type. Also cut from solid metal or sheet packing. Write for Bulletin 564.

CORRUGATED METAL GASKETS

Plain or jacketed type. Made of ingot iron, aluminum, stainless steel, copper, brass, nickel and monel in all sizes and shapes. Write for Bulletin 565.

PROMPT DELIVERIES

CHICAGO-WILCOX MFG. CO.

7709 So. Avalon Ave., Chicago 19, Ill.

Safety Clothing

Product items of a new complete line of MSA aluminized asbestos safety clothing are described in a four-page, illustrated bulletin just published by Mine Safety Appliances Company, Pittsburgh, Penn.

Designed for the added comfort and protection of workers in "hot spot" job assignments, the new flexible, lightweight clothing is suggested for wear in plant operations involving working white hot ingots, coking, slagging, furnace repair and similar high heat occupations.

Contained in the bulletin is a review of the protective properties of the new aluminized asbestos safety clothing—said to reflect over 90 percent of all radiant heat. A keyed chart of laboratory controlled test results indicates the high heat-resisting efficiency of the new clothing in contrast with the performance of other commonly used protective materials.

To get a copy, circle **No. E23** on Readers' Service Card, last page this issue.

Tone Units

A new bulletin released by Builder-Providence, Inc., a division of B-I-F Industries, Inc., describes transistorized audio-tone transmission as used in supervisory control systems.

The literature tells how power savings of 95 percent over conventional vacuum tube systems and space savings that allow 50 percent more equipment to be installed can be realized by utilizing the transistorized plug-in units now used in the Synchro-Scan Supervisory Control Systems developed by Builders Providence. The tone units are produced by Warren Manufacturing Company, Inc., for resale by B-I-F Industries. Design features, operational data, characteristics, and specifications of units as applied to telemetering and control are described in the bulletin.

To get a copy, circle **No. E24** on Readers' Service Card, last page this issue.

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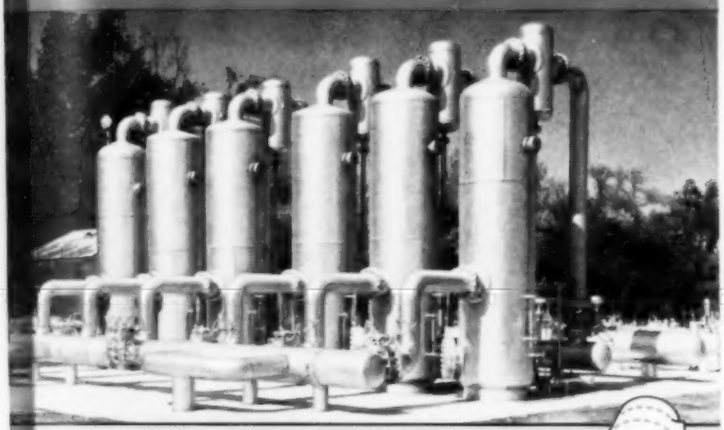
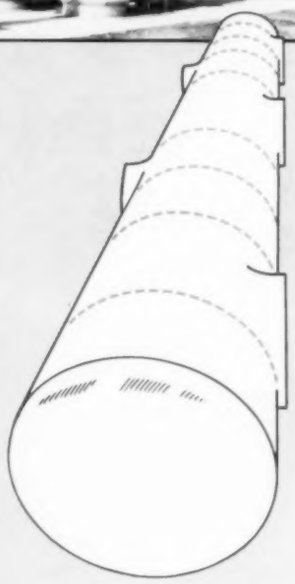
The Youngstown Sheet & Tube Co. 2

How Oklahoma Natural compounded savings by specifying cold extrusion



Oklahoma Natural Gas Company compounded installation savings at their South River Station, Tulsa, by (1) designing for multiple outlet headers and, (2) specifying Fluor-formed headers with cold extruded outlets.

The diagram at the right shows how each of the four 20″ O.D. headers at the South River Station eliminated five 20″ × 20″ × 12″ reducing outlet tees and eight 20″ welds (indicated by broken lines on diagram)—a total saving of 20 tees and 32 welds!



By specifying Fluor-formed headers with cold-extruded nozzle outlets, these added savings were realized

1. IMPROVED STRENGTH & DURABILITY – Polished extrusion dies impart a smooth, dense surface finish to the outlet – assurance of longer service life where vibration or pulsation stresses are involved.

2. CLOSER DIMENSIONAL TOLERANCES – Flowing steel under compression while in a tough stable condition permits extremely close tolerance dimensional configurations – center-to-center and centerline location tolerances are easily held within .060″.

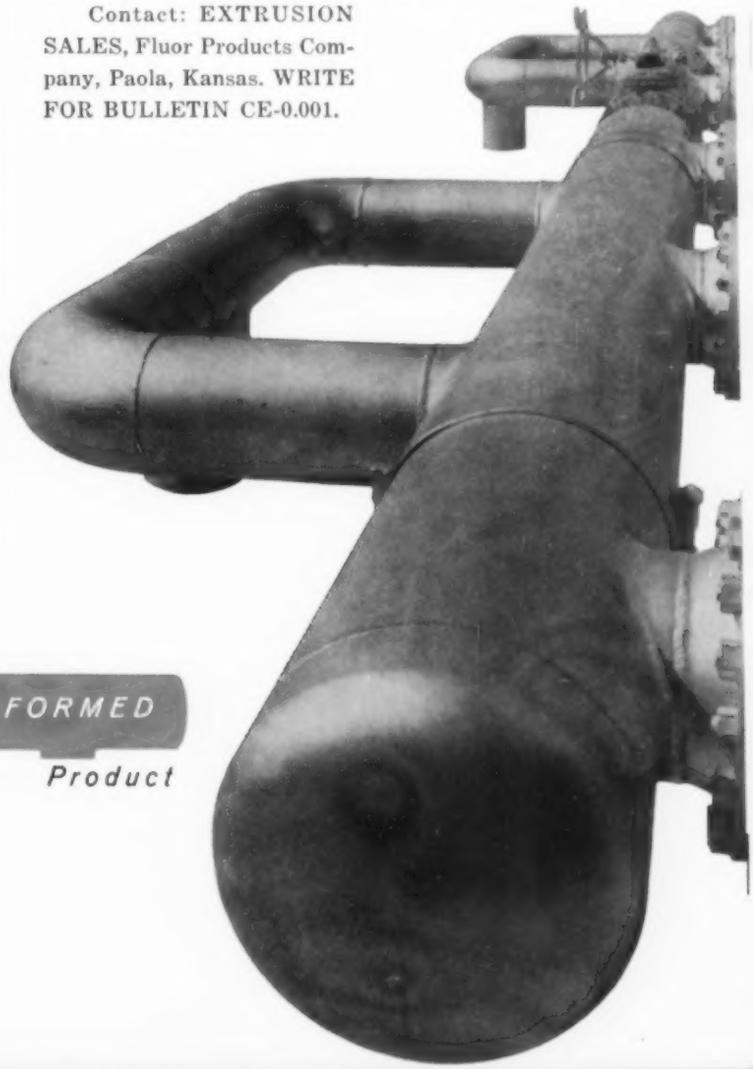
3. LESS MATERIAL NEEDED – Fluor-formed cold extruded multiple outlet headers need no extra length for manufacture – they are made to the exact length and wall thickness required.

4. NO DELAYS – Because nozzle outlets are cold extruded, headers are often made from stock or from the same pipe used elsewhere in a job – production is faster, inspection is simpler.

DIFFICULT JOBS A SPECIALTY

Many difficult design problems can be solved by cold extrusion techniques. Qualified Fluor Products Company engineers are ready to furnish you specialized technical information on how this process can be utilized to save you time and money.

Contact: EXTRUSION SALES, Fluor Products Company, Paola, Kansas. WRITE FOR BULLETIN CE-0.001.



FLUOR PRODUCTS COMPANY

A Division of The Fluor Corporation, Ltd.

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Wood Products Mill – SANTA ROSA, CALIFORNIA

Metal Fabrication Shops – PAOLA, KANSAS

A FLUOR-FORMED Product

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SALES OFFICES AND REPRESENTATIVES IN: Birmingham, Boston, Buffalo, Chicago, Denver, Detroit, Houston, Kansas City, Los Angeles, Minneapolis, New York, Philadelphia, Pittsburgh, San Francisco, Tulsa.

ASSOCIATES: Fluor Corporation of Canada, Ltd., Toronto; Head, Wrightson Processes, Ltd., London, England.

WE USE *GASOS* EXCLUSIVELY

BECAUSE WE CAN'T AFFORD TO TAKE CHANCES

As the engineers who specify pumps, we have an obligation toward our field people. Their job is to keep our pipe lines flowing. Ours is to help them. They are entitled, we feel, to the best we can give them in pumps, and we know of no pumps with a longer, more consistent and more impressive performance record than Gaso's. That's why we specify Gaso Pumps exclusively in their capacity range.

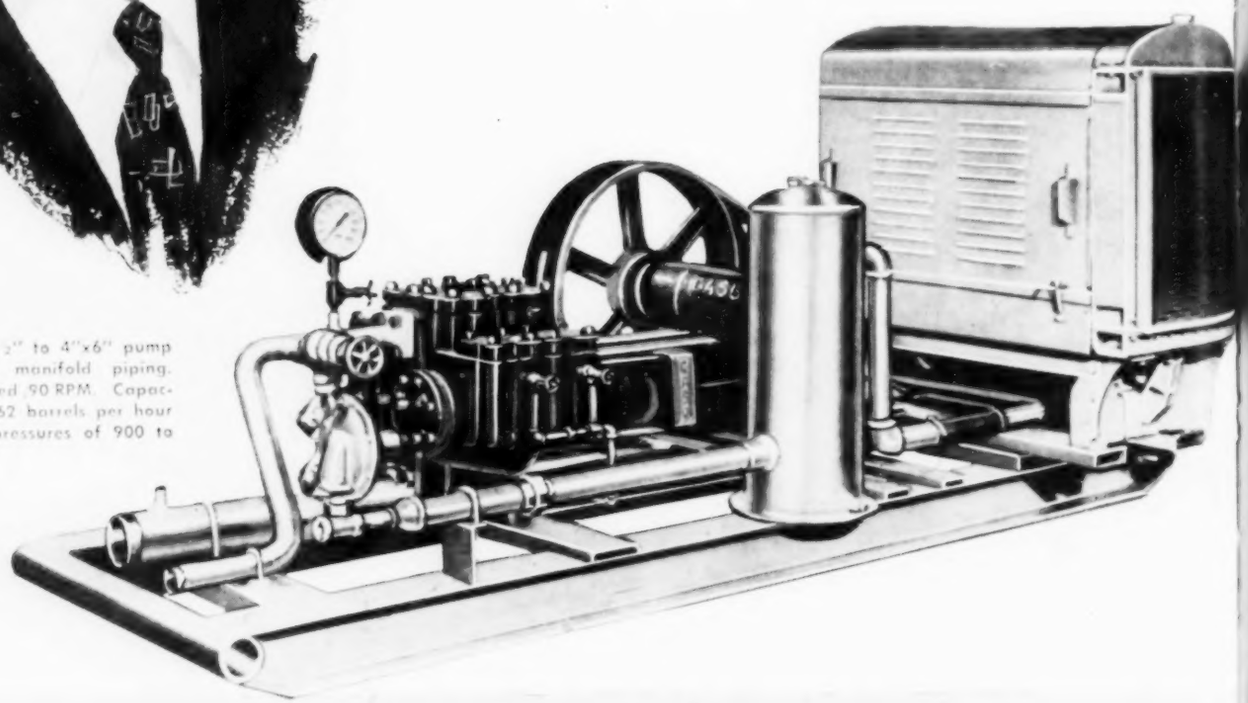

Fig. 1849—2½" to 4"x6" pump with special manifold piping. Maximum speed 90 RPM. Capacities 59 to 162 barrels per hour at working pressures of 900 to 350 PSI.

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